ANNALS OF MEDICAL HISTORY
VOLUME VI SPRING, 1924 NUMBER 1

THE MULTIPLE PERSONALITY OF DR. GUY PATIN*

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THE seventeenth century was the farce-comedy era in the medical history of France. Of all the actors who held the stage no other is quite as interesting, no other played as many rôles as did Dr. Guy Patin, son of François Patin, one-time advocate in the parliament of Paris.

The Patins were an old family of most estimable *bourgeoisie*. An uncle of François', Martin-Jean Patin, likewise a parliamentary advocate, had made an enviable reputation for himself in that capacity. François forsook the capital, a move he never ceased to regret, and settled in the little hamlet of Hodenc-en-Bray, near Beauvais, in Picardy, where he married and where, in 1601, his son, Guy, first saw the light.

In speaking of his early education Patin tells us[1] that it was his father's firm determination that his boy should not be constrained, as he himself had been, to hide his light under a bushel, in the deadly dull confines of an obscure country village. His cherished ambition was to educate him for a legal career in a metropolis. To this end the elder insisted that Guy, while yet a tiny chap, should read aloud Plutarch's "Lives," and pay strict attention to pronunciation. With the same design in mind, his father placed him first in college at Beauvais and later, when he was but nine, took him to Paris to the college of Boncourt, where he was in residence during the two years of his course in philosophy.

Not long after, the *seigneur* of Hodenc, who had lured the elder Patin to that place with fair promises, desiring to repay him in a way "which would cost nothing," offered him a benefice for the boy. This Guy flatly refused, protesting that nothing under heaven would prevail upon him to enter the priesthood. His father took this refusal in good part, but not so his mother. She was deeply incensed at this high-handed rejection of a tangible recompense for her husband's long, valuable services to the nobility. The upshot of it all was that for five years the boy did not cross the family threshold nor did he lay eyes on his parents.

Whether it was in his father's library or during his course at the college of Boncourt that the young Patin first made acquaintance with the works of Erasmus, it is impossible to determine. The fact that he did make this acquaintance is paramount. Erasmus, in course of time, came to be his mentor, his idol; and, of all the characters he assumed, that of the famous sage and satirist of Rotterdam was his prime favorite.

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* Read before The Boston Medical History Club, March 19, 1923.

[1] Letter to Spon, June 13, 1644.

[NOTE: Headband and initial from Erastus: Varia opuscula medica, Frankfurt on Main, 1590.]

Thrown upon his own resources, his vicissitudes in the capital were not few. History has it that he was employed as proof reader in a printing establishment, when Riolan, the anatomist, discovered and fancied him, and encouraged him to study medicine. Manifestly, in the boy's attitude toward the Church, and in the selection of an employment with which to eke out his scanty means, he was Erasmus to the life—as well he knew.

Reduced to its lowest terms, the study of medicine in Patin's time meant the learning by heart of the entire works of Hippocrates and Galen, together with those of every conceivable author who commented favorably upon them. To accomplish this to the entire satisfaction of the Faculty, four qualifications were necessary; a sound knowledge of Latin, unremitting application, a prodigious memory and a habit of thought guiltless of even an infinitesimal taint of originality. Patin qualified in every particular.

In 1627 he became the proud possessor of the doctor's bonnet, and from that moment to the end of his long career, in 1672, a new side was conspicuous in his character. This pertained solely to his professional tenets and activities. In these he was Hippocrates *tout craché*, to use an expression current in his native Picardy. So much did he fancy himself in this rôle that he aped, as far as possible, the severe and simple garb of the wise man of Cos. The lancet and a purge, consisting of senna, cassia, rhubarb and syrup of pale roses, constituted his entire therapeutic *armamentarium*.

To the mildly curious in matters of medical history, Patin is known mainly for his incessant bloodletting and purging, for the incredible relentlessness of his vitriolic attacks upon polypharmacy and for his incoercible abhorrence of all compounds stibial, for him a term invariably synonymous with Stygial. But if the lancet and the purge had been his only claim to fame, the peristaltic action of time would, long since, have eliminated the name Patin from the annals of history. Patin, unavowed amanuensis of all the classical scholars and medical savants of all the centuries prior to the seventeenth, wielded the goose-quill almost as often as he did the lancet. He wrote letters, nearly two thousand of which are extant, and in them he betrays to the full the extraordinary compositeness of his personality.

For the better understanding of him, as he is reflected in his "Letters," it must be remembered that in the reign of his second sovereign, Louis XIV, pedantry and its kindred vice, preciosity, masquerading as erudition, reached their apogee. The polite society of the capital was saturated with them. Of the latter vice Patin was guiltless, for the simple reason that his style, as nearly as he could make it, was the style of Erasmus. Of pedantry, on the other hand, he was the living embodiment and he gloried in it.

Various compilations of the "Letters" have been given to the public, none of which has satisfied all the critics. That of J. H. Reveillé-Parise, which appeared in 1846, is in three volumes and contains probably the most misleading pen-portrait of an author that has ever been evolved. Reveillé-Parise would have his readers see in Patin a leading figure in the momentous happenings which agitated all France during the minority of Louis XIV. He makes him a noble type of public-spirited citizen who scorned wealth, position and the patronage of those in high places, and who, with utter unconcern for his own personal safety, raised his voice in angry protest against the unspeakable suffering, wretchedness and misery brought upon his fellow-citizens and his fatherland, through the rapacious greed of wealth and power, the cold-blooded treachery, the heartless indifference and the unparalleled sordidness of an Italian interloper, a prince of the Church: *Animal rubrum, capax et vorax.* He would also have him known as a man with "an immensity of notions upon an infinity of subjects," including statecraft and foreign diplomacy. In brief, he shows him as the perfect embodiment of everything that is the opposite of the ineffable baseness, the leprous corruption and the cynical brutality of his day and generation.

In the "Letters" themselves we find little evidence of the paragon which Reveillé-Parise so floridly depicts. The antithesis is laughable. All through the stormy and stressful period of the Fronde, while famine stalked through the barricaded streets, Patin occupied, first a house in the fashionable quarter of the Rue St.-Opportune, then what his sons assured him was the finest location in Paris, a mansion in the Place du Chevalier du Guet. This latter, he himself tells us, was on a beautiful site and away from the noise of the city. There he smugly boasted of being amply provisioned for a siege of any length.

The most ludicrous aspect of the whole situation is that there is not the slightest evidence in the "Letters" that either Mazarin or any of his many satellites was ever aware of the factitiously furious hatred into which Patin whipped himself against them. Indeed, it is more than probable that the Fronde meant naught else to the writer of the "Letters" than a splendid chance to play Erasmus. As Patin, he had absolutely not even the ghost of a reason for taking up the cudgels against the Loyolists. They may have made serious inroads into the national exchequer, but they got precious few, we may be certain, of his carefully hoarded sous. On the other hand, the opportunity to retaliate for what, a century or more before, the Church had done to his venerated Erasmus, was much too good to be lost. So he attacked the followers of Loyola, tooth and nail, not in the open forum but seated, quill in hand at his desk, within a nicely calculated range of the glowing hearth in his spacious study and nobody about but those silent friends: his books and his prints. There, in letters now to one trusty correspondent, now to another, he flayed the Loyolists to his heart's content, with bitter irony borrowed from Horace and other classical champions of civic morality. There is not a grain of individuality in the whole of it, any more than there is in his incessant tirades against the publishers, a tribe *solo reipublicæ literariæ incommodo nati.*

A PHYSICIAN MAKING HIS PROFESSIONAL CALLS IN PARIS IN THE SEVENTEENTH CENTURY

Just why this tribe was a nuisance to Patin personally is not altogether apparent in the "Letters." With the Fronde complicating France's border war, the cost of paper was prohibitive and workmen scarce. Conditions in the publishing industry were not a whit worse than they were in any other. This circumstance, however, was no excuse in the eyes of the affluent venesector, avid of new imprints of his old favorites. So he probably pestered the publishers until the sight of his rhubarbative visage made their very gorge rise. Failing to get from them "merchandise" they found themselves utterly unable to produce, he remembered how scurvily their forebears in the trade had treated both his patron saint, Erasmus, and his admired Joseph Scaliger, and proceeded to revile them in endless letters to his friends, Belin, Spon and Falconet. Of only one has he a good word. In August, 1660, he writes Belin as follows: "There has just died at Lyons an honest publisher, named Devenet; he is a great loss to the public; he was about to print the complete works of Erasmus, in seven volumes in-folio, which were to sell cheap."

A few instances suffice to enlighten us upon the big-heartedness of Patin, a point upon which Reveillé-Parise lays much stress. In the short sketch of his life written to Spon, he touches upon his five lean years in the capital, during which he was completely at outs with his parents, and says, among other things: "During that time I enjoyed the acquaintance of a man who advised me to study for the medical degree in Paris." The man in question was Riolan, but the magnanimous Patin fails to acquaint his correspondent with the name of his benefactor. A second instance is more striking still: Sometime about 1663, a young bachelor of medicine, Gervaise by name, "a mighty good Latin poet,"[2] found himself unable through poverty to go on with his medical courses. In his despair, the youth had the temerity to beg the Faculty to remit what sums he had already paid for tuition, and to take him on as a free student. So singular a request could not fail to arouse warm discussion in the august body to which it was addressed. The pros and cons were gone over in meticulous detail. Finally, some good friends of Patin's, prevailed upon by the necessitous Gervaise, approached him and begged him to exert his influence in the boy's behalf. Patin could find no precedent in the history of the Faculty for the performance of any act of Christian charity. For fear of the consequence, he refuses to subscribe to the young bachelor's despairing petition. The consequence he feared was that, if the petitioner obtained the favor sought, someone would come along every two years and ask the same indulgence, a contingency which would have caused great disorder. His kindly ultimatum was as follows: "Every last one of us had to pay. I am of the opinion that newcomers should be made to do the same: *bibe aut abi, solve aut abi*"; in other words, let Gervaise find the wherewithal to pay his fees or get out.

The hatred of Patin for his contemporary, Theophrastus Renaudot, one of the most curious and interesting figures of the time, is historic. He pursued him relentlessly in faculty meetings and in the courts. He exhausted upon him his ample store of invective, his rich vocabulary of villifying epithets. Not content with this, he spilled the dregs of his wrath and malice upon his enemy's sons, and for a long time successfully blocked their efforts to secure admission to the ranks of orthodox practitioners. Time and again in the "Letters" Renaudot is scornfully alluded to as the *gazetier*, a designation which referred to one of the various enterprises of this resourceful and versatile individual, the editing of a newspaper.

Thanks are due Patin for this sobriquet. It fits him infinitely better than it ever did his execrated confrère. In all the many years of his busy life in the capital, nothing escaped his hawk-like eye and nothing that he saw or heard was too trivial to be recorded. His long, inquisitive nose, the measure of his perspective, was into everything. Indeed, so much was he on the "go" that, in one of his grimly humorous moments he suggests, as highly appropriate for himself, this epitaph: *Hic quiescit qui numquam quievit.* In his daily rounds he covered a goodly portion of the city, and it is not difficult to picture his tall, spare figure, clad with Hippocratic severity, nipping now into one, now into another of the *hôtels* of his well-to-do patients. In one quarter, his grim, deeply-lined countenance momentarily relaxes as his eager ears drink in the recital of some particularly scabrous morsel of court scandal or intrigue. In another, he encounters a parliamentary official and wrings him dry of the latest news political. In a third, he pauses long enough to look over a batch of scurrilous pamphlets anent Mazarin and his "detested crew of Loyolists" and, by the outlay of a few centimes, to bring his own cherished collection up to the minute. In still another, he chances upon a confrère who shares his views on that "devil's invention," antimony, and stops for a good long gossip, during which the pair check up their respective lists, both of its victims already under the sod and of those who shortly will be, unless concerted action is taken by orthodox fellows like themselves to put a quietus upon the stibial activities of the whole long-eared crew of apothecaries and their conscienceless and philargurous accomplices, those unspeakable *aulici medicastri et alii nebulones.*[3] In fine, it's a poor day's hunting when he does not return to the confines of his quiet, sumptuous study with a bumper bag of miscellaneous information and misinformation which, in a handwriting as crabbed as himself, he forthwith shares with his admiring and sympathetic correspondents—the Belins, the Spons and A. Falconet.

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[2] Patin's own expression.

Even the most absurdly trivial item in the bag reminds him of a sage aphorism, a brilliant epigram, a satiric couplet or a savage commentary upon men and things, to be found within the covers of one or more of his favorite authors: Hippocrates, Erasmus, Joseph Scaliger, Casaubon, Apuleius, Horace, Seneca, Cicero, Vergil, Juvenal, the list is a long one. And it is highly probable that, in the inditing of many an epistle, the quill was temporarily laid aside, while he stood before his well-filled shelves, verifying some one of the pithy and apposite citations with which the "Letters" are larded. Practically never are these citations laudatory of the person or persons who evoke them. Particularly hateful are those having reference to Mazarin, that *escroc titré*, and his willing tool, the queen-mother, who, even with a cancer gnawing at her breast, arouses in Patin not the slightest stir of pity. In his daily snoopings about, he learns that the poor soul often has bad nights and disturbing dreams, so to Falconet the news is imparted,[4] and the tidbit ends with the following sentence full of covert and sinister meaning: "Hippocrates has a fine little treatise on dreams; you will find in it what I think, but do not dare write to you." It is to be hoped that Anne of Austria was ignorant of the existence of this soothing lucubration.

It is in his impersonation of Erasmus that Patin's disguise is thinnest. In this connection the first portion of a letter to Spon, under the date of November 16, 1645, is worthy of reproduction:

> Since my last, nothing has happened here worth the telling except that the ambassadors of Poland, the bishop of Varsovia and the palatine of Posnia, who have come to take back the princess Marie as their queen, made a superb and solemn entry on Sunday, the 29th of October, with a pomp the like of which has never before been witnessed. They came in by the gate St.-Antoine and proceeded to their headquarters in the Vendôme mansion, thus crossing Paris from end to end; so they were seen by countless crowds of people who had been rushing since morning to get places along the route of the procession.
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> I was very busy all that day with people who did not have the strength to leave their beds; but I can assure you that in the streets where there was no parade, there was so great a solitude that it made me think of a town deserted by reason of famine or pestilence, from which I pray God that He keep both you and me. I might have gone outside the gate St.-Antoine, where I could easily have seen the whole affair, but I did not care to take the

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[3] Court charlatans and other sorry leeches of the same stripe.

[4] Letter of September 25, 1665.

trouble. These public spectacles have little lure for me; they make me melancholic, in spite of my naturally cheerful and happy disposition, while they delight others. When I see all this worldliness, I pity the vanity of those who exhibit it. In all truth, there is no such fuss made over the philosophers of whom I should vastly enjoy being the equal in understanding and achievement. No, such things are for hoi polloi who are dazzled by this magnificence and are more easily amused. I spent quite a bit more time than usual that day in my study, and was occupied to my content. My neighbors say that I made a great mistake not to have been at this ceremony, and that it was the finest thing in the world. They reproach me for my gloominess and lack of interest, while I contend that they do not appreciate the value of time. To you I leave it to decide who is in the right. If you rule against me, I promise you that the next time the Pope comes to Paris, I will make it a point to go as far as the rue St.-Jacques to meet him; and there, reading a book at some bookseller's, I will wait for him. But all this would still be merely to please you, for to tell you the truth, if King Solomon with the Queen of Sheba were to make their entry in all their glory, I doubt if I should leave my books. My study is far more to my liking, and I would rather be there than in the finest palaces of Paris . . . .

This edifying parade of self-denial and disdain of mundane pomp and display is, without acknowledgment as usual, modeled servilely upon an Erasmic "Colloquy" anent sinful waste of precious time and the silly doings of vulgar and commonplace people. The advent of the royal envoys, whom Patin wasted no time in viewing but much in learning about in great detail from the neighbors, served the eager newsmonger as an excuse for a short strut in the rôle of his idol. A display of fire-works or an unusual candle-illumination anywhere in the city would have provided him with precisely the same copy. Nine times out of ten where he is sententious, it is Erasmus not Patin who is discoursing.

It is hard to say whether the bloodletter is more amusing as pedant or as *naïf.* In both rôles he is equally ridiculous. In a letter to Spon, in 1653, he regrets that he did not, in the leisure of his youth, acquire a thorough knowledge of Greek, a tongue which would have given him, so he says, a full understanding of the texts of Hippocrates and Galen. (Heaven only knows how his brain could have accommodated any more of the wares of these authors, without springing the cranial sutures!) In a letter to Falconet[5] he reports that no pains are being spared to advance the building of the pavillion of the Louvre. But the vastness of the project inspires in him no reflections upon the significance to posterity of this noble monument to the reign of *le Roi-Soleil.* This is what it actually brings forth from him: "They say that there are two thousand masons and six hundred joiners (at work), hardly a Solomon's temple where, the rabbis tell us, twenty thousand workmen were employed daily."

A year or so before this date a comet had made its appearance. Patin jeers at the vulgar herd who stood shivering with mingled cold and terror, as they gazed at it from the Pont Neuf at three in the morning, incidentally getting a coryza which they forthwith blamed on the celestial phenomenon. Comets have no terror for him. His opinion about such things, so he informs us, is identical with that of Erycius Puteanus and other wiseacres who, "relying upon the authority of Holy Writ, 'Fear not heavenly signs,' claim that comets, like simple meteors, foretell neither good nor evil." But Patin by no means lets the matter rest there. In a further letter to the same correspondent, he delivers himself of the following:

> The comet which has recently appeared will furnish material for the astrologers, and will doubtless bring forth some new book for the curious. The word, comet, should be masculine, but common usage having made it feminine, I am for following the example of the majority, in spite of the rule of syntax, lest I be looked upon as an innovator and a grammarian, a silly sort of person according to Athenaeus. The comet which appeared in the year 1572, in the sign of Cassiopea, was quite a different thing

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[5] October 30, 1666.

> from the comet of Aristotle, who had seen nothing like it, and who perhaps had never heard of it. Astronomers today know much more about it than he did, which I say without wishing to disparage him, but he did not know it all. The truth about things is discovered little by little. I hold it for certain that there are two kinds of comets, the one sublunary, the other celestial or ethereal. Look up what Fromondus has to say on the subject in his book, "Meteors."

On reading this letter, one feels like congratulating the comet-gazers of the Pont Neuf on the fact that they were not compelled to endure Patin's learned disquisition, along with a cold in the head. This, however, is but the merest sample of his pedantic performances. In May, 1667, with France mobilizing her armies, he writes thus to the same correspondent:

> The prince de Condé is out of it in this war; but his son, the duke d'Enghien, is going in the quality of chief of volunteers. The father is very much emaciated and broken with the gout; it is the sin of princes, who are people of flesh and blood, subjects and slaves of their passions. Theirs is what one might call merited illness. It was not at all the same case with Dido, that good queen of Carthage, at the end of the fourth book of the Æneid, *Nam quia nec fata, merita nec morte peribat, sed misera ante diem.* I am very angry with Vergil for picturing her as a loose woman who allowed herself to be debauched by a Trojan prince who flourished more than three hundred years before her time.

In a letter to Spon, September 17, 1649, we find Patin very much exercised with regard to the exact epoch when Quintus Curtius flourished. He discusses the matter in all its aspects, arrives at no satisfactory conclusion, but finds consolation in the fact that, in the seventh book of this learned author, there is an "enormous" geographic error.

With all his affected scorn for the rich and powerful, he purrs like a well-fed feline at the table of M. Lamoignon, president-in-chief of the parliament of Paris, a classical scholar and a patron of letters. The "incomparable" M. de Lorme chances to refer to the president-in-chief as Patin's "Maecenas." This allusion calls forth the following to Falconet: "A propos of that great favorite of Augustus (Maecenas), that great patron of the muses, of Vergil and Horace, did he, at his death, leave any children?"

Patin tells with the utmost unction of the Lamoignon carriage being sent to fetch him, of the *baute volée* encountered in the presidential mansion and of the talks about letters that regularly went on there. It was just the atmosphere his pedantry craved for its fullest blossoming. The center of a select and sympathetic coterie, he probably held his auditors entranced with his academic dissertations upon every conceivable topic. M. Lamoignon chances to ask him if the ancients were familiar with sugar, and immediately learns not only that they were but that Theophrastus speaks of it in his "fragment" on honey, of which he mentions three kinds: One derived from the flowers, that is to say, ordinary honey; another from the air, which is the manna of the Arabs; and a third from cane, which is sugar. He also learns that Pliny knew about it and spoke of it under the name, "salt of the Indies"; that Galen and Dioscorides called it *saccbar*, and that in their time it was very scarce.

On one occasion, at least, he held forth before this same coterie "for a good hour and a half," and doubtless enthralled it with the recital of many of the choice things read or heard by him, for example, that it took three hundred years to find, cut and put in place the stone which completed the building of the temple of Diana in Ephesus; that Adam was not the first man; that above the moon there was a new world, with new men, new forests, new seas just as in the world about them; that America, *et tota illa terra Australis nobis incognita,*[6] was a new world, not of Adam's time, and that Jesus Christ did not come on earth for the salvation of the people over there. Small wonder the story gained currency that every time Patin sat at the Lamoignon board, he found a louis under his napkin.

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[6] And all that Western land to us unknown.

The naïveté of the man is everywhere apparent in his communications. His long-cherished desire to figure in the world of authorship affords the most amusing and interesting illustration of it. In 1664 appeared his learned thesis: *An totus homo, naturâ sit morbus?* His answer to this momentous question was, as one might confidently expect, unqualifiedly in the affirmative and there is nothing in his correspondence to show that he ever changed his mind in the matter, quite the contrary. Neither this illuminating contribution, of which he was vastly proud and of which he always kept on hand a goodly store of reprints for distribution, nor his contribution on "Home Remedies," which appeared in Guybert's "Médecin charitable," a labor of love designed to put the detested apothecaries out of business, sufficed to secure him the coveted place *in republica literaria.* In spite of what he says to the contrary, nothing in the world would have brought him greater satisfaction than to see *Guido Patinus, doctor medicus, medicus et professor regius* on the title-page of some stately Latin in-folio, the work of his pen. Long and secretly he pondered the making of a book, and when he was full to bursting with it, he plucked up courage and confided the project to his friend, Spon. The letters containing the confidence are the most human he ever wrote. Under date of July 13, 1649, we find the following:

> As I consider you my best and most intimate friend, I venture to open my mind to you and ask, with most humble reverence, that you give me your opinion upon a plan I have of writing a work on "Practice" embodying my own ideas, some hint of which I have already given you. Herewith, I send you a copy of the title which I have designed for your inspection. I beg you to tell me if it is too long or, indeed, if certain terms of it prevent the granting of your approbation. Be this as it may, I ask your friendly opinion, and trust that you will give it. Do not flatter me, I beg of you. Criticize me, instruct me, put me on the right road: *Judicioque tuo cadam vel stabo.*[7] That's how I feel about it, and I trust that you will favor me with that complete frankness which should exist between friends.

The title, a Latin affair of seventeen full lines, then follows. In it the would-be author sets forth that the projected work is a manual in three books, dealing with the nature and treatment of internal disorders. And it is needless to say that the therapeutic measures extolled (venesection and purgation) are the only ones considered worthy by Patin to find a place within the covers of a medical work designed to embody the purest orthodoxy of the schools. It is equally needless to say that the title also contains a warning to the reader that the death-dealing wares of chemists and apothecaries will be thoroughly denounced, and the superiority and absolute harmlessness of a few select remedies demonstrated beyond the peradventure of a doubt. A quotation from Seneca closes the title and enhances greatly its dignity and authoritativeness. The writer then proceeds with his letter as follows:

> If you were not my best and most particular friend, I most certainly would not crave this indulgence; but upon the faith I have in you, I dare, I presume, to rely upon your willingness to favor me with your judgment in the matter in hand. Show the title, if you will, to Messrs. Gras and Falconet and let me know, if you please, their feelings. *Facit amor in me tuus, ut hoc audeam.*[8] If you find all this boresome, you may blame yourself and your kindness, and say with Martial this fine verse which the most worthy people in the present-day world have frequent reason to repeat: "Semper inhumanos habet officiosus amicos."[9]

On the tenth of the following month Patin again approaches his friend on the subject then nearest his heart, his projected manual. He says: "You will oblige me greatly by letting me know what you find to criticize in the title I sent you; it seems to me that you praise it over much,[10] while others tell ne it is too long for a little volume." hen, after an explanation in Latin as to ow the author plans, in the text, to avoid the in of tautology, we come upon this amazing nti-climax.

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[7] By your decision I stand or fall.

[8] Let your love for me secure me this report.

[9] The goodnatured always have friends to impose upon them.

[10] It is evident that Spon's expressed opinion was just what Patin desired, but the latter betrays the usual *folie de doute* of the budding author.

> I am not planning to bring out anything more han a tiny volume to sell for twelve sous, so hat nobody can complain of a great outlay for ts purchase, or have much to reproach me with f the work is not to his liking; indeed, I will make amends in every way possible. I will even say in my preface that, if anybody does not like the work once he has purchased it, I stand ready to refund his money. But, I beg of you, treat me as a friend; tell me what you really think of the title and the plan of the work; *hoc debes amico*. To whom should I turn for good advice if not to you? Believe me, docile as I am by nature, there are many people to whose suggestions I would turn a deaf ear, and upon whose judgment I would never rely . . . .

What sage counsel all this eager solicitation brought forth from the amiable and implicitly trusted Spon is not discoverable. He probably acquitted himself no better and no worse than the average friend placed in his most delicate, uncomfortable and embarrassing situation. Whatever he said or failed to say, the Patin project appears to have gone the way of many such, and a twelve-sous medical masterpiece, money refunded on application, was lost to the world. Nearly ten years later this author *manqué* delivers himself of the following:[11]

> Posterity will easily get along without any writings of mine; so I have no great desire to leave any. There are but two kinds of people who write, wise men and fools, and I am aware that I am of neither kind. Furthermore, the life we lead in Paris is too strenuous; the exercise of our profession robs us of that tranquillity which is necessary to those who essay to write for eternity . . . .

A splendid instance of "sour grapes," if ever there was one!

Patin's hectic practice may have left him no calm leisure to commit to paper, for the guidance and edification of succeeding generations of medical men, the invaluable information gleaned from daily use, through many years, of the lancet and the purge. It certainly did not prevent him from stealing enough time to get together a formidable array of books or from shutting himself up in his cosy study "away from the noise of the city," and devouring them one and all. The tomes which found their way to his shelves were not the sort one might read as one ran.

As a bookman, a *bibliomaniac*, rather, Patin had few equals, certainly no superiors, in his day and generation. In this rôle he is genuinely himself, and one becomes lost in admiration and amazement at the skill and thoroughness with which he enacted it. He writes Falconet:[12]

> In the year, 1627, I occupied the chair[13] on the occasion of the upholding by M. G. Joudouyn of his thesis, *de Furore uterino*, because about that time I was treating for this disorder a beautiful girl to whom her mother wanted to marry me; but I had no thought save for my studies. So occupied was I with my books, of which I made some new purchase every day, that I spent whole days and nights over them; but the night-studies so altered my health that, to repair it, I was compelled to abandon study altogether . . . .

He later goes on to say that the rest thus forced upon him is a debt he owes to medicine, without whose aid he would inevitably have killed himself through the inordinate desire which possessed him to learn many things and to become very wise. Nowhere else in the "Letters" is there evidence that their author ever again broke down from a similar cause, in spite of the fact that from the time above indicated until 1651, when his library boasted ten thousand volumes, his buying and reading of books was incessant. And in 1653, at the age of fifty-two, he tells us that he has not yet found it necessary to put on glasses, a circumstance which he attributes to his life-long moderation in the use of wine.

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[11] Letter to A. Falconet, November 8, 1658.

[12] Letter dated Sept. 19, 1659.

[13] A privilege accorded by the Faculty to the newly-received doctor of medicine.

Three years after his graduation he writes to Dr. Belin of Troyes, then unknown to him, introduces himself and acquaints the doctor with the fact that, after completing a collection of antiquities of "our medical treasures of Paris," he is now in search of a complete set of the theses upheld before the Faculty. Of these, he goes on to say, he already has five hundred, but lacks those bearing on Belin's course, 1593–4. For these or for an opportunity to copy them, his desire is so ardent that he makes to Dr. Belin what he considers alluring, not to say irresistible, overtures touching upon exchange and purchase—to say nothing of fees for the services of an amanuensis. In 1643, he reports that his collection of this sort of "merchandise" now numbers more than seven hundred, all in good order and many in duplicate; and boasts that not a single thesis can escape him. These learned screeds, however, were merely the small wares of his miscellaneous stock. His cherished possessions were stately folios, and few there were of any consequence which did not, sooner or later, come to display their charms upon his shelves.

To Patin a printing press was a far more alluring sight than the loveliest woman that ever breathed. About womankind, their place in the great scheme of existence and, with notable exceptions, about the fruits of their womb, he was brutally cynical; about the products of printing presses, on the whole, rarely. He knew the whereabouts and the charms of these consorts of the pen as he knew his pocket, and he awaited what they gave promise of bringing forth with an abounding joy, a fluttering anticipation keener and more genuine than ever it was given an expectant father to experience. Not a jot did it matter to him that mother Church saw fit to brand as illegitimate certain of their offspring. For such he had an especially warm place in his heart. Their stigma quickened his eagerness to give them asylum and to cherish them.

In his hunt for new accessions to his shelves, he was as tireless as a gossip's tongue. His finger was on the pulse of the book marts of England, Holland, Denmark, Germany and Italy. He button-holed the authors of his own city, and corresponded with those of others. He exhausted all available sources of information with regard to every forthcoming publication, and fretted incessantly over every obstacle, whether of God's creation or of man's, which delayed either its appearance or its safe arrival at the door of his study. Tall or short, stout or slim, in single file or in regiments, the desired volumes were given the most cordial of welcomes, and their new owner so thoroughly saturated himself with their contents that one readily believes that in health it was not blood, in illness not "mud,"[14] which flowed through his veins but, at all times and under all conditions, that compound of burnt "linseed-oyl, rosin and letharge of silver," with which the printers of his day inked their forms.[15]

In everything that happened on land or on sea, at home or abroad, he saw the possibility of some new and learned disquisition, written from the standpoint of science, philosophy or religion. As aforesaid, he affected to be revolted by the crookedness and the machinations of Mazarin and his "crew," and to be broken-hearted over the public distress occasioned by them; and yet, he was on tenterhooks lest the Fronde should cease before enough good libels appeared against the *pantalon sans foi*, wherewith to make a lusty volume.

If a week passed without something new on the booksellers' counters, romances and books of devotion excepted, his letters invariably contained the expression: *Nihil hic habemus novi in re literaria* or *in republica literaria nihil novi*, and the dilatory successors of Gutenberg came in for a good sound penlashing. In one breath he tells his correspondents that, everywhere throughout the capital, people are being killed, robbed and massacred day and night; in the next he gleefully announces that an invoice of new editions of his favorite authors is on its way from Holland.

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[14] Patin's designation for the blood of his patients.

[15] Moxon. Mechanick exercises, 1, 78.

The death of individuals of prominence outside the field of letters is generally heralded by him, but he invariably dismisses the matter with the quotation: *contra vim mortis non est medicamen in hortis*[16] and the recommendation that the dead bury the dead. He then hurries on to the subject nearest his heart, books and their authors. If the health of a friendly author is menaced, his solicitude, such as it is, is immediately aroused, and he utters a fervent prayer that the *bon Dieu* will spare the stricken one, at least until he has put the finishing touches to the third, the fifteenth or whatever the number may be of the last volume of his learned contribution. The death of authors not in his good graces is invariably the result of alcoholic abuse. Good riddance to such scum! They have but cheated the hangman, and the sooner their bemused and heretical vaporings provide material for an *auto-da-fé*, the better.

Patin knew the size of every private library of note in the capital, and eagerly scanned the catalogues of such as chanced to come upon the market. In his own collection were a "Treatise on all the libraries in the world" and a volume on the making of libraries, the latter by his oft-mentioned and truly erudite friend, Gabriel Naudé, librarian of the Mazarin collection of forty thousand volumes. In spite of these available aids, the venesector boasts that his own collection was got together without the help of anybody, and there is not the slightest reason in the world to doubt his word on this point. What he did not know about format, paper, types and binding was not worth the trouble to learn. Directly he opened the covers of a book, such errors as it contained were drawn to his keen eyes, as to a magnet. And he exposed them mercilessly. He considers the second edition of one learned work good because it is purged of the "forty thousand errors" which marred the first printing of it. He strongly approves of M. Van der Linden's "new edition" of *Aulus Cornelius Celsus*, brought out by M. Elzevir at Leyden, because the text has been corrected in eight hundred places, in virtue of certain books loaned by him to the editor, and for which kindness he is recompensed by having this "quite faultless" reprint dedicated to him. Browsing for a few minutes at a bookseller's counter, he glances through two volumes in folio by a Spanish physician, named "de Heredia," and tells us that, in the short while the books were in his hands, he found so many printer's errors that he was quickly disgusted with them; but hastens to add that he wants a copy because, as he explains: "They contain a treatise which makes them desirable: it is a commentary on the 'Histoires épidémiques d'Hippocrate.'" It would have been nothing short of impiety to neglect an opportunity to add to his "Hippocratiana." He must do everything in his power to rehabilitate himself in the eyes of this shade, if shades have eyes. Did he not fail, in the leisure of his youth, to acquire that thorough knowledge of Greek, indispensable to a perfect understanding of this wisest of all physicians!

Patin had upon his shelves not only all available editions of the fathers of medicine but also all the commentaries and all the commentaries upon commentaries that ever were written about them. Side by side with these stood the lucubrations of learned doctors who flourished in times nearer his own: Fernel, who figured in his private saints' calendar, Hollier, Duret, Sylvius and very many others. He knew in detail the history, often crowded with vicissitudes, of the manuscripts from which the works of these great men were prepared for the press. In this connection hear what he has to say on Duret:[17]

> I must tell you that the two editions of 1588 and 1621 are the same; that the first is quite

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[16] An allusion to the botanic remedies then in use.

[17] Letter to Spon, January 10, 1648.

correct and that, with the exception of a few more errors in the second, among others a line omitted on a certain page, they are one and the same. This book was also printed in Germany in imperial octavo, very flat, fifteen or more years ago, so that our edition is the fourth, and will be as near like the first as I can make it. Jean Duret, who died here in the year 1629, never contributed so much as a comma to it.

Classical authors he had by the shelfful. Everything of Erasmus ("Oh, excellent man that he was!"), which was anywhere procurable, was also in his possession. Indeed, he tells us that the "Letters" of that idolized philosopher was the finest book in his entire collection. He loved it dearly in every format, but his pet was a huge in folio, "thick as three fat fingers, a book worth its weight in gold." Among his other loves were Casaubon, Joseph Scaliger and a formidable company of writers with names ending in *us*, at whose head stood Hugo Grotius, *viri erudissimi omnes*, to whose credit stood *multa opera magna lectu dignissima.* Rabelais and Montaigne were also represented, although their satiric flings at the medical profession were not at all to Patin's liking.

Even the savants whom he encountered in his daily life, or with whom he carried on a "commerce of letters," were not neglected. The *Universam philosophiam Epicuris, cum animadversionibus Petri Gassendi*, in three volumes, he considered one of the finest things in the way of a book he had ever seen. He had everything from the pen of the erudite, the "incomparable," M. Saumaise; in particular, his *Epistola de caesarie virorum et mulierum coma,*[18] a screed which gave its pedantic owner infinite pleasure and satisfaction.

Upon his shelves stood also the entire works of Riolan, the younger; and the flesh-and-blood picture given us by the indefatigable letter-writer of this individual, famous alike for his work in anatomy and for the demon of controversy which possessed him, is well worthy of special consideration. Riolan, it will be recalled, was the man mentioned by Patin in a letter to Spon, whose counsel decided the Patin career. But the kindly offices of the "old codger," *le bonhomme*, as he generally calls him, did not cease with this friendly act. During many years the self-engrossed pedant was the recipient of his bounties, the climax of which is thus recorded in a letter to Falconet:[19] "At last M. Riolan has given me his place as royal professor. . . ." The language betrays how much it irked the regius professor-to-be to have to wait for the Riolan shoes. However, the anticipation of the six hundred livres which went with the chair did a great deal to sustain his drooping patience.

From him we learn that the "old codger" was a tall, powerfully built man, fond of good food and drink. The abstemious Patin says:[20]

> He took some wine every day, either neat or with very little water, and gave me as an excuse that it was two-year-old Burgundy . . . ; he laughed at me for putting so much water into mine, and said that I would not live long, which may well be true, but not from such a cause or from such a disorder. *Quisque suos patimur manes;* everyone has in his head his own peculiar whim,[21] his fatal ill fortune. . . .

Small wonder that the "old codger" sought solace in Burgundy neat. In his journey along life's pathway he encountered far more thorns than roses. What with a Xantippe for spouse, sons whose vicious and criminal courses had robbed him of practically all he had put by against the days of lengthening shadows, and the loss, under the most tragic circumstances, of the apple of his eye, his daughter, he can hardly be blamed for having taken a daily dip into the waters of Lethe. He was, withal, quite as much of a bookman as was his protégé. His immense knowledge of things more curious than useful and his prowess in controversy produced in the latter a mingled feeling of envy and enthusiasm. Directly there appeared some book or manuscript which betrayed evidence, however slight, of originality of thought or which, in any way, gave promise of contributing something of real and permanent value to the advance of medical science, Patin lost no time in getting it into the "old codger's" hands and in egging him on to rend it tooth and nail.

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[18] At first glance, the present-day meaning of the word, *coma*, comes to mind. Nothing was farther from the author's intention. The English equivalent of the title is, "Letter concerning men's hair and women's tresses." The letter itself touches upon a quarrel raging at the time as to whether it was more becoming for a minister of the gospel to deliver his sermons with his hair cut short or covered with a long wig.

[19] October 30, 1654.

[20] Letter to Spon, June 8, 1857. Patin died at 71; Riolan at 77.

[21] The word employed is *vercoquin*, for which our current slang term, bug, is the exact equivalent.

Occasionally the belligerent anatomist would administer a sound drubbing to one of Patin's pets. Here is an example of the reaction of such a thrashing on the letter-writer:[22]

> Do not be astonished if M. Riolan has rudely treated our good friend M. Hofmann; the latter began the trouble with five or six slaps at Riolan, the father, in his "Institutions." The elder Riolan was a good Picardian, sweet and learned; but this son is a sour beggar who cannot spare or pardon anybody; *qui malit amicum perdere quam verbum,*[23] and I have no doubt that some day he will get as good as he gives. He seems very old to me; he is beginning to go to pieces, and is quite asthmatic; that is why I fear for him this coming winter. It was he who spoke of the casuists, and who would gladly have worked my name into it all through, but I would not permit it. For this he growled at me for some time and, for nearly a month, sent me no more of his proof-sheets, although he was hardly able to correct them himself. He jabbers too much and has no insight. . . .

To complete this delicate apology for his old patron, he continues thus:

> Without me, it (the "Anthropographia" of Riolan) would have had no index, M. Riolan saying that he had no time to make one and that he did not care if it were without one. Furthermore, the publisher admitted that he did not know anyone who was capable of doing this work, so that, if it had not been for the trouble I was willing to take, there would have been no index at all.

It is in vain that Patin affects to have done the index to the famous "Anthropographia sive anatomica" as a pure labor of love, for which, he tell us incidentally, he received no word of thanks from anybody, apparently overlooking, for the moment, the fact that the work was dedicated to him. Be this as it may, he would not for the world have missed this opportunity to link his name with that of Riolan in the world of authorship. His hypocrisy and mock modesty with respect to his achievement are amusing beyond words:[24]

> I am delighted to know that you have received my little present of the "Anthropographia" of M. Riolan. I hope the book will please you the more in that it comes to you straight from my heart. It is quite substantial, and its contents are, for the most part, agreeable, except where the author gets into a rage and bites Bauhinus, Parisanus, Hoffmanus, Bartholinus and others to whom he gives no quarter, claiming that he has the right to complain of and maltreat them thus. Over and above the fact that the book and the matter it contains are capable of securing your perusal, the *index*[25] I have made for it may attract your attention and induce you to look the latter over and verify its accuracy. It was all done in a few evenings, but done with utmost attention to detail, partly on account of the author himself, who is my friend, and partly for the benefit of the public. I hope that those who read it will find it profitable. . . .

This is indeed a strange eulogy of a book. The "old codger" must certainly have been utterly lacking in insight if his wish was, as Patin boasts, that the world should look upon the latter as his very best friend.

In November, 1650, Patin was made dean of the Faculty. Shortly thereafter he felt the need of new quarters and purchased the sumptuous house on the Place du Chevalier du Guet already alluded to. Whether this spreading of his wings was the direct outcome of a desire to find a more elaborate setting for his new dignity or a more commodious sanctuary for his books, the writer does not pretend to decide. His motives were, doubtless, no less mixed in this enterprise than in his others. In any case, the move was made from the rue St.-Opportune, and the manner of it is so characteristic and so amusing that it well deserves relating:[26]

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[22] Letter to Spon, July 23, 1649.

[23] Who would rather lose a friend than not have his say.

[24] Letter to Falconet, July 20, 1649.

[25] The italics are Patin's.

> I have just received your letter which brings me much consolation in my present confusion of moving. All my volumes in-folio have been carried and placed on their shelves; more than sixteen hundred of them are already in order. We are beginning to move the in-quartos, which will be followed by the in-octavos, and so on to the end of the procession, which will last a month longer. . . .

Nine[27] thousand volumes strong there were, so he informs us, in this procession which clattered in relays over the cobbles of Paris. And we may be certain that every conceivable precaution was taken to prevent, en route, too great jolting and bruising of a certain beloved quartet of tomes, of which their dour-visaged owner thus tenderly speaks:

> The "History" of Pliny is one of the finest books in the world; that is why it is called the library of the poor. Put Aristotle beside it, and you have a library almost complete. Add Plutarch and Seneca, and before you is the whole family of good books, father, mother, eldest-born and cadet.

Nothing is said about it, but it is more than probable that not a few volumes were never consigned to the carrier's cart, but found their way to the new study, concealed beneath the ample folds of Dr. Patin's cloak. These were vellum-bound, contraband, affairs purposely dwarfed in format by Amsterdam publishers to facilitate their surreptitious entry into France under the very noses of the Loyolists, whose ban upon such "merchandise" was drastic in the extreme. Of another matter there is likewise no mention. Certain it is, however, that somewhere in the long-drawn-out procession there was a packet, of which Patin was as proud and solicitous as he was of all his other possessions put together. Its contents were an ample provision of a thesis with the title: *An totus homo, naturâ sit morbus?*

One wonders at what stage of the proceedings the famous placard[28] containing a fearsome warning to the wretches who borrow books and never return them, was removed from the old study door and affixed to the new.

The new study was high-ceiled and spacious but, to accommodate all his books, Patin found it necessary to annex a small room adjoining. On the chimney mantle of the study was "a fine picture" of a crucifix, given him in 1627[29] by an artist whom he had had cut for the stone. On either side of the *bon Dieu* hung the effigies of the owner of the study and his estimable, though somewhat choleric, spouse. (Incidentally, it is safe to assume that her bodily presence was never tolerated in this *sanctum sanctorum.*) Below the crucifix were portraits of his deceased parents; at the two corners those of the worshipful Erasmus and the venerated Joseph Scaliger. The "chimney ornaments" were not, however, the study's sole adornment. To a huge beam which traversed its entire width were attached, at either end, a dozen portraits of illustrious men, each group being nicely lighted from an adjacent window. Small wonder that Patin purred complacently at finding himself in such "fine and good company," in one of the best houses in the most exclusive quarter of the capital.

In what has gone before he has been pushed backwards and forwards at will across the checker-board of time. Of this infraction of the unities the writer is not only unashamed, but deliberately plans to add a further enormity to his literary crime. Patin was, as he has told us,[30] elevated to the coveted honor of the deanship of the Faculty, in November, 1650. Following the custom of the times, he gave a jolly dinner in celebration of this momentous event, to thirty-six of his colleagues, on the first day of the following month, his study being the scene of the festivities. The time and place of this merry-making, as recorded, are very disconcerting to the writer, in view of the fact that he has decided to part company with the knight of the lancet and the quill, in the new study, Place du Chevalier du Guet, on the very night of the dinner in question. Nor is this all. He is determined to change the date of this great event from December, 1650, to the same named month of the year 1630. This seems madness. It is, but there is method in it. Interest in historic events, as everybody will admit, is frequently enhanced by simple and innocent alterations of fact.

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[26] Letter to Spon, January 24, 1651.

[27] Elsewhere he says ten.

[28] Letter to Belin, November 17, 1634.

[29] This being the year in which Patin received the doctor's bonnet, it is easy to believe that the picture stood in lieu of a fee. Of the relative values of the operation and the reward, nothing need be said.

Pursuant, then, to the author's wishes as to time and place, the dinner is on. Patin, at the head of the long table, gracefully acknowledges endless compliments and chuckles at the rapid-fire of witty toasts. For one brief evening he is determined to transfer his allegiance from Hippocrates to Bacchus, and to view with complacency his rare old Burgundy flowing like tap-water. In fact, he takes his own drink neat and playfully chides the dry-as-dust senior on his left for his neglect of the bottle. On his right is the "old codger," Riolan. He needs no such chiding. From time to time the host surreptitiously raises his glass toward the graven features of Erasmus ("excellent man that he was"), and a silent but heartfelt toast accompanies the gesture.

As the last course ends, the fun waxes fast and furious. Quodlibets in Latin, itself of doubtful character, fall from the lips of even the hoariest and gravest of the diners. The air is surcharged with medical puns which were showing signs of wear and tear when Galen was in swaddling clothes. Patin is egged on to tell a story, and responds with the recital of an amusing incident which occurred in Thrace several centuries before the Christian era. When the laughter over this has subsided to the point where, by shouting, he can make himself heard, he calls upon the "old codger" to say something about the "circulators," and at the same time, with anticipatory glee, gives the guest on his left a playful poke in the ribs.

Nothing loath, the anatomist rears to its full height his bulky figure and launches forthwith into a tirade against the execrated crew in general and their leader in particular, which, in concentrated venom and corrosiveness, surpasses all his previous efforts. He is in the very thick of it when a commotion is heard in the region of the study door, where is visible, his back to the company, the figure of a little man, in conflict with the host's faithful Swiss. Riolan suddenly ceases his vituperation, and a deep silence falls upon the entire company about the board. In a trice the diminutive combatant shakes off his opponent and, turning, fairly bounds, with eyes blazing and with drawn dagger, into the very midst of the mystified merrymakers, who by this time have forsaken the table. "Harveus!"[31] they gasp with one accord.

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[30] Letter to Falconet, December 2, 1650.

[31] Aubrey, Jno., Esq. Lives of eminent men, 1813, III, 382. "He (Harvey) was, as all the rest of the brothers, very choleric, and in his younger days wore a dagger as the fashion then was; (nay, I remember my old school-master, Mr. Latimer, at 70, wore a dudgeon, with a knife, and bodkin, as also my old grandfather, Lyte, and Alderman Whitson, of Bristow, which I suppose was the common fashion in their young days), but this Doctor would be apt to draw out his dagger upon every slight occasion."

ANDERS ADOLF RETZIUS (1796-1860)*

By O. LARSELL, PH.D.

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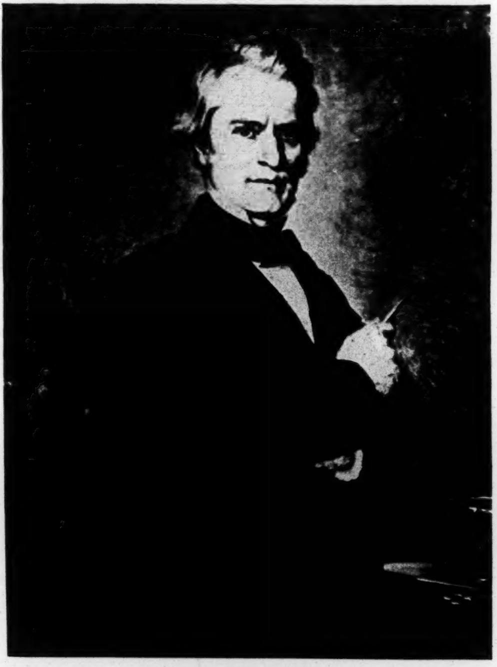
SWEDEN has produced many leaders in various branches of science. Chemistry and anatomy, botany and physics, anthropology and geography, as well as many other subdivisions of exact knowledge have been greatly enriched, and in some cases virtually established, by the labors of her sons. The lamp of learning has always burned bright in this northern country. The adventurous spirit of the Norseman must needs explore, even as did his ancestors a thousand years ago. With most of the earth itself well known, the adventurer now often turns to the undiscovered in the world of knowledge. Perhaps also something of the Viking strain, which sometimes found its ancient outlet in pillage, remains in those who today struggle, less tumultuously but just as vigorously, to wrest from Nature the prizes of her secrets. It is to one possessing a happy blend of this sublimated Viking spirit and the explorer's zeal that we will turn our attention in this sketch.



Anders Adolf Retzius
(1796–1860)

Anders Adolf Retzius, anatomist and anthropologist, was born in Lund, October 13, 1796. He was the son of Anders Jahan Retzius, who from 1787 to 1812 was professor of natural history in the University of Lund. His mother was Ulrika Beata Prytz.

The University of Lund could not have had many students at that time. The city itself in 1805, nine years after Retzius was born, had only 3,224 people, and the entire population of Sweden in 1800 was but 2,347,343. The enrollment at the university in 1922 was something over 1,400, with the population of Lund more than 20,000, and of the entire country more than 6,000,000. On the basis of these comparisons the student body in the time of Retzius must have been relatively small, as universities are considered at the present time.

The father, Anders Jahan, apparently occupied what would now be considered an entire settee, for we learn that in addition to initiating his son into zoology, he also assembled a collection of minerals and rocks, and apparently taught mineralogy. This collection, which was donated to the university in 1815, is mentioned[1] in connection with a celebration of the institution in 1897.

We have little information concerning the boyhood of our subject. Evidently this period of his life was spent in Lund, in such studies and occupations as would ordinarily fall to the lot of a university professor's son. On completing his preparatory studies he entered the university.

Here under the tutelage of his father and of Arvid Henrik Florman, the professor of anatomy, the interest of the young student was turned toward natural history and anatomy. Florman especially, who taught veterinary science in addition to his duties as professor of anatomy, exercised a strong influence in shaping the career of the young Retzius. It was Florman, apparently, who initiated him into the method of careful observation which was to mark his scientific work in later years.

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* Read before the University of Oregon Medical History Club, January 19, 1923.

[1] Fürst, Carl M. Lunds Universitets Årsskrift, N.F., II, vi, 5.

At the age of nineteen years Retzius went to the University of Copenhagen and there spent the year 1816. While in Copenhagen he studied primarily under the direction of the Danish anatomist Ludwig Levin Jacobsson, but he also came under the influence of Örsted, the chemist and physicist, and of J. H. Reinhardt in zoology. Retzius writes of the latter as a "true disciple of Cuvier, master both of anatomy and of zoology." Concerning Reinhardt's lectures in comparative anatomy he wrote nearly thirty years later that he vividly remembered the scholarly presentations, illustrated by many difficult preparations made by the lecturer's own hands. It was from Jacobsson, however, that the young naturalist received the chief stimulus to enter upon a scientific career.

After his return to Sweden Retzius continued the medical studies in which he had become interested and took the degree of Doctor of Medicine from Lund in 1819. The effect of Jacobsson's influence is already shown at this time in the title and dedication of his thesis for the doctorate, namely: "Observationes in anatomium chondropterygium praecipue squali et rajae generum." This was dedicated to *anatomo celeberrimo Ludovico Jacobsson.*

While pursuing the studies upon which this dissertation was based Retzius discovered the interrenal organ in Elasmobranchs. This organ has since been shown to be homologous with the cortex of the adrenal body of higher forms, and according to the indications of recent work is the active part of this gland in producing its characteristic secretion. The discovery of the interrenal organ was the first of many new features in anatomical science to be credited to the young naturalist.

In 1818, a year before he received his medical degree, Retzius was appointed to the veterinary staff of the royal military academy at Carlberg and in 1821 was added to the staff of the veterinary institute of Stockholm. On December 27, 1823 he was appointed professor of veterinary science in this institution. By these appointments he was brought into the metropolis. Stockholm at that time must have numbered considerably less than 100,000 in population, for in 1805 its inhabitants numbered but 72,652. Here, nevertheless, he came into contact with the intellectual leaders of the country, a contact which must have been very stimulating to the quick intelligence of the young scientist.

An older brother of Retzius named Magnus Christian, had completed his medical work at Lund in 1815, and soon after this removed to Stockholm. Here he built up an extensive practice, and also in later life occupied positions of eminence on the medical staff of the army. The father was also brought to Stockholm from Lund in 1818. The occasion of this transplantation so late in life of the professor of natural history, was that in this year he suffered from a stroke which paralyzed the lower part of his body. The younger son, Anders Adolf, thereupon came to Lund and took his father to Stockholm, where he might be under the care of his sons.

The year following the appointment of young Retzius as professor of veterinary science there occurred an incident which was to change his career and bring him more directly into connection with medicine in its human aspects, at the same time allowing him to continue his work in comparative anatomy and morphology. He was engaged in debate with Nils Åkerman, then prosector and temporarily in charge of anatomy at the Caroline Institute of Medicine and Surgery, on the anatomy of the eye. Retzius showed such knowlege and training that at the close of the discussion, Jacob Berzelius, the chemist, who was at the time head of the Institute, came forward and said to the learned debater: "This is our man, just the one whom we seek; you, sir, shall become professor of anatomy at the Caroline Institute." The matter was so arranged that Retzius retained his connection with the veterinary school, because of the larger stipend paid there, but at the same time held the title of professor of anatomy at the Caroline Institute, and gave part time to the duties of this position. He was assisted at the medical school by his friend J. S. Billing. It was not until 1840 that he severed his connection with the veterinary school and gave all of his time to the Caroline Institute, although in 1830 he was appointed Inspector of the latter, in addition to retaining his original title as professor of anatomy.

The Caroline Institute had been founded in 1810, although the name by which it is now known was not adopted until 1822. At the period when Retzius was appointed to the staff there was still much to be done to establish the high standards which had been adopted at the reorganization of the school in 1822. Retzius was twenty-eight years of age at the time of his appointment, and at the beginning of his scientific career.

During these early years in Stockholm he had not allowed his new tasks to dim his love of investigation. From 1822 to 1824, in collaboration with G. J. Ekstrom, the newly appointed chief surgeon of the Seraphim Hospital, he engaged in a series of experimental studies on ligaturing arteries and on the effect of vagotomy on the digestive processes. At the same time he was engaged in purely morphological work of fundamental importance on the structure of the hagfish, Myxine glutinosa. The foundations for a correct understanding of this primitive member of the vertebrate series were laid by Retzius in two brief but significant contributions, the first[2] published in 1822 and the second[3] in 1824.

It is of interest to note that this curious animal has been placed in widely different groups by various naturalists at different times. Linnaeus, who gave it the name by which it is still known, classified it with the worms. Others referred it to the group of the Mollusca, another included it with the fishes, and still another described it as an amphibian. The studies which determined its true structure, and thus its position in the animal series, were made by Anders Retzius and Johannes Müller. The latter has usually received the credit because of the series of papers dating from 1835 to 1845, published by him, which described Myxine quite completely. These papers were published in German, and received a much wider circulation among the scientific men of the world than did the earlier papers of Retzius, which also had the disadvantage of being published in a language which was read by a relatively small number outside his own country.

The interest of Retzius in this subject dated back to his naturalist father, Anders Jahan Retzius. According to Erik Müller, who now occupies the chair at the Caroline Institute to which Retzius was called one hundred years ago, and from whose interesting sketch[4] of the history of the Anatomical Institute of the Stockholm institution much of our account is derived, the contributions of Retzius on the anatomy of Myxine may be summarized as follows: (1) He accounted for the first time for the intricate cartilaginous cranium; (2) he described the digestive system; (3) he discovered a new gland, which Johannes Müller later showed is homologous with the adrenal organ; (4) he accounted for the content of the slime glands; (5) he described for the first time the pronephric ducts, but not the pronephros itself, which was later discovered by Johannes Müller; (6) the small but complicated brain was so depicted and described that only details have remained to be added since; (7) of the cranial nerves he found the vagus, the trigeminus, the facialis and the acusticus, although he considered the last two as trigeminus; (8) he discovered the simply constructed auditory organ; and (9) he described the vascular system so completely there remained little for succeeding investigators to add.

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[2] Bidrag till ader-och nervsystemets anatomi hos Myxine glutinosa (contribution to the anatomy of the vascular and nervous systems of Myxine glutinosa).

[3] Ytterligare bidrag till anatomien af Myxine glutinosa (further contributions to the anatomy of Myxine glutinosa).

[4] Müller, Erik. Anatomiska Institutionen i Stockholm, 1756–1910. Karolinska Mediko-Kirurgiska Institutets Historia, Stockholm, 1910.

These researches reveal a mastery of technique, especially on the vascular and nervous systems, that was to be used to good advantage in his later work on mammalian and human material.

After completing his work on Myxine, he and his friend Billing demonstrated the ciliary ganglion in the horse and also contributed an important account of the sphenopalatine ganglion in the same animal. He discovered that the rami communicantes between the cerebro-spinal nerves and the sympathetic trunk are connected, not alone with the dorsal nerve roots, but also with the ventral. By his injection methods he discovered the peripheral canal of the cornea, later named the canal of Schlemm. His methods of injection were also used to excellent advantage in the study of the circulatory system in various parts of the body, and a number of connections and anastomoses were demonstrated which previously had not been known.

An opportunity to dissect a python led to a comparison of the reptilian with the avian lung. He had already become interested in the respiratory system of birds in 1824, through a study of their skeletons and the peculiar connections of the central cavities of the long bones with the avian air-sacs. Various other studies and developments in anatomical technique also belong to this period, 1824 to 1835.

During these years he made several journeys for the purpose of study to the continent and to England. He states that these journeys played a large rôle in his further development. In 1828 he attended the naturalists' meeting in Berlin. It is related that at this meeting the discovery by Von Baer earlier in the same year of the mammalian ovum was not attracting the attention which its importance entitled it to receive. One of Von Baer's biographers relates "Dass die alte Herren seine Schrift nicht lesen oder wenigstens in ihrer Ueberzeugung nicht stören lassen würden, konnte Baer sich wohl denken. Aber auch die Jungen schwiegen." Under these circumstances on the last day of the meetings, one of the youngest of the delegates, Anders Retzius, asked Von Baer to demonstrate his discovery. Von Baer was not slow to heed the request and on a hastily procured animal undertook the demonstration, which was successful. The official recognition of this important addition to embryological knowledge could therefore no longer be withheld. It is to the credit of Retzius that he called it forth.

In 1833 he made a journey to England, France, Germany and Austria, and in the course of this trip attended the Congress of Naturalists at Breslau. Here he came into contact with Purkinje, who introduced him to the new realms just being opened up by the microscope. This meeting marked a turning point in Retzius' career, for on his return to Stockholm he began a series of microscopic researches. The first of these to be published was an important paper called "Mikroskopic undersökningar öfver tändernas, särdeles tandbenets struktur," which appeared in 1836. In this contribution Retzius described many features of dental structure, and left a lasting contribution on the histology of the teeth. The brown striae, or contour lines of Retzius, in the enamel, still bear witness to his careful observations in this field.

To this period of his life belong also the studies on Amphioxus. We can best follow Erik Müller's account of this phase of the work of Retzius. According to Müller, the Swedish naturalists Lovén and Sundevall found Amphioxus on the southwest coast of Sweden about the same time that Costa had described it from Naples (1834). Costa had included it among the fishes under the name Branchiostoma lubrum. It will be recalled that the animal had been discovered in 1774 by Pallas and described under the name Limax lanceolatus. Yarrell gave the first general description and grouped it with the Cyclostomes under the name Amphioxus lanceolatus. Müller[5] states:

> No animal form, with the exception of the Selachii, has had more importance in the development of the new morphology than this at first sight insignificant creature. Occupying the border zone between the vertebrate and the invertebrate organization, it is the only remaining relic of a group which was surely strongly represented in previous ages, and which probably is closely related to the transition forms between the above named large groups of the animal kingdom.

Retzius undertook the investigation of this form, as he had of that other form of uncertain position, Myxine. In a letter to Johannes Müller in 1839 he described several new discoveries on its structure which he had made. Because of trouble with his eyes, which was developing from excessive use of the microscope, he invited Müller to accompany him on a trip to Bohuslän, on the coast of Sweden, to investigate Amphioxus more completely. This Müller did in 1841 and in twelve days the two friends worked out the morphology of the little animal and many of the physiological problems connected with it.

The following and last period of Retzius' work, from about 1840 to his death, was of quite a different type than the preceding. His intensive microscopical work had brought on an affection of the eyes which forbade further work with the microscope. His researches were therefore turned to the skeletal, nervous and circulatory systems in their grosser structure and relationships, and to topographical anatomy and anthropology.

The anatomy of the stomach occupied his attention for a time. As a result of his studies on this organ he sharply differentiated for the first time the two divisions of the pyloric stomach, namely, the pyloric antrum or vestibule and the pyloric canal. He further differentiated in the fundus of rodents as well as in the human stomach a gutter-like groove, the gastric canal, which is present along the inner surface of the lesser curvature. This trough affords a direct passageway for the stomach contents from the cardia to the pylorus. This discovery was forgotten and lost until 1907, when it was confirmed by Kaufman and it was further demonstrated by O. Cohnheim on experimental dogs that water or salt solution introduced by a tube into the full stomach, passes through this canal in the lesser curvature and presently emerges at the pylorus without mixing with the other stomach contents.

In the course of his studies on the brain Retzius found and described a group of gyri situated on the under side of the splenium, between the gyrus hippocampi and the gyrus dentatus. The group consists of small, rounded eminences, rudimentary in the human brain, but of importance in many mammals. Structurally they constitute a part of the hippocampal formation, and they are evidently associated with the olfactory system. Gustaf Retzius many years later named them the gyri Andreae Retzii, in filial honor of the discoverer.

In topographical anatomy Retzius is best known from his description of the extraperitoneal cavity in the ventral body wall, known as the prevesical cavity, or cave of Retzius. This space, which contains a loose mass of connective tissue, fat, and blood vessels, affords surgical access to the bladder without the necessity of entering the peritoneal cavity. This apparently accounts for the name which Retzius gave it, "*blåsporten*, door of the bladder." He also described the fundiform ligament of

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[5] *Vide* NOTE 4, p. 18.

Retzius, which lies in front of the ankle joint.

It is as an anthropologist, however, that Retzius is probably best known. The difficult task of classifying the races of mankind engaged his attention. The familiar subdivisions of the human race, namely, Caucasian, Mongolian, Ethiopian, American and Malay, which Blumenbach (1752–1840) has given us are based primarily on color of skin and geographical habitat, rather than on anatomical features. Anders Retzius introduced an entirely new point of view to this phase of anthropology. He based his classification on the physical characteristics of the various races. The feature which he most emphasized and which he established as the fundamental basis of his classification is the cranial or cephalic index. He showed that there is a quite constant ratio between the breadth of the cranium and its length, in the various races of mankind. This ratio is usually expressed at present in terms of per cent, thus when the ratio of head breadth to length is as 3 to 4, the cranial index is said to be 75, when breadth is to length as 4 is to 5 the cranial index is 80. On this basis Retzius classified crania in two groups: Those having an index of 75 or less he called dolichocephalic or long-headed, those whose index is above 75 he considered brachycephalic or round-headed. At the present time a mesocephalic group is usually recognized by anthropologists, comprising crania with indices between 75 and 80, so that the brachycephalic group would include those having above 80 as a cranial index. This, however, is but a modification of the grouping established by Retzius.

Craniometry had been practiced long before the time of Retzius, both by artists and anatomists. In 1680 Tyson described the dissection of a chimpanzee, and included measurements of the skull. He states that these measurements were taken with a view to showing the difference between this skull and that of the human. It appears that even before Tyson's time anatomists had compared by measurement the skulls of apes and of humans in the dispute over the anatomical material of Galen, whether it had been human or simian.

Whether or not Retzius was familiar with the work of Tyson and of the disputants concerning Galen, the credit is properly his of turning this valuable method to the comparison of human races. These researches began in 1840. The impulse to undertake them, according to his own statement, he received from perusing a monograph by Sven Nilsson on the ancient inhabitants of the Scandinavian North. In 1842 at the meeting of the Scandinavian Natural History Society in Stockholm, Retzius presented an epoch-making paper on the form of the skull in what is now designated as the Nordic race. The principal points in this paper, according to Erik Müller[6] are as follows: The dolichocephalic cranium, as found among the Swedes, is oval, one-fourth longer than broad. The neck is elongated, as determined by passing a straight line through the auditory openings, which thus bisects the longitudinal cranial axis in the middle. The height of the arc which is formed by the rounding of the neck, with this line as its cord, is equal to the cord. The surface upon which the cerebellum rests is nearly horizontal. The tuber occipitale, which corresponds to the posterior points of the cerebral hemispheres, lies behind this. The brachycephalic cranium, which is typical of the Slavic race, is short and rounded. The length is greater than the breadth by only one-seventh or one-eighth, and in form it approaches a square with rounded corners. The neck is as if chopped off directly across, and forms by its continuation with the back of the head a large, low vault or flattened surface. The rounding of the neck forms an arc whose height corresponds to only one-half the cord between the auditory openings. The latter also lie posterior to the middle of the longitudinal axis of the head. The bony surface on which the cerebellum rests is rounded, and rises with the posterior wall of the skull so that it becomes continuous with the posterior surface of the neck.

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[6] *Vide* NOTE 4, p. 18.

In addition to these cranial measurements there are certain characteristics based upon the facial bones. Here also are found two types, namely, the orthognathic and the prognathic. In the orthognathic type the cheek bones do not project beyond the front surface of the cranial vault, and the facial profile is accordingly perpendicular. The prognathic type, on the other hand, has projecting cheek bones and a much less perpendicular profile.

On the basis of these characteristics Anders Retzius built a simple classification of the subdivisions of the human races then known. Each head type, dolichocephalic and brachycephalic, is subdivided into orthognathic and prognathic, with the result indicated below:

Dolichocephalic: Orthognathic; Gauls, Celts, Britons, Scots, Germans, and Scandinavians; Prognathic; Greenlanders, many North and South American races, such as Caribs, Botocuders, etc., Negroes, and Maoris.

Brachycephalic: Orthognathic; Slavs, Finns and Tschudic tribes, Afghans, Turks, Lapps, Jacuts, etc.; Prognathic; Tartars, Kalmucks, Mongols, Malays, many North and South American tribes, as Incas, Harruas, etc., and Papuans.

While this classification would be greatly modified by anthropologists at the present time, it is of interest to note the result of the first attempt at classification based upon physical criteria. The cephalic index is now used by most anthropologists as the measurement of perhaps the greatest significance in determining racial relationship. In one of the most recent contributions[7] of inclusive type on the analysis of the races of man and their origins, cranial index, height of skull and nasal index, all physical characteristics of the same category as that which Retzius introduced, serve as the basis. Retzius is the founder of craniometry, and may be justly regarded as one of the founders of physical anthropology.

Anders Retzius died on April 18, 1860, after a brief illness, at the age of sixty-three years. His life had been full of scholarly activities, not all to be measured by his published scientific work. During his several trips to the continent and to England he visited especially the museums and laboratories of anatomy. He formed friendships with many of the leading scientific men of his day. Johannes Müller calls Retzius his best friend, and the names of Bischoff, Liebig, Rudolph Wagner, Ernst Weber, Von Baer, and others are numbered among the circle of his close acquaintances. Correspondence with these and others, with interchange of scientific ideas had its part in his busy life.

Retzius was interested not only in anatomy, but in all living nature. Among his writings one finds, in addition to the strictly scientific papers, articles on other topics in various fields. A history of the development of anatomy in the Scandinavian North[8] served as the subject of his presidential address before the Royal Academy of Science in 1845. Biographical sketches,[9] particularly of Swedish scientific men, writings on sanitation and on the water supply of Stockholm and contributions to horticulture, as well as other topics, indicate the range of his interests. A quotation from a letter[10] written by his son, Gustaf Retzius, in 1892, will serve to illuminate the breadth of interest and particularly the enthusiasm for biological science, which Anders Retzius always showed. Gustaf Retzius writes:

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[7] Dixon, Roland B. The racial history of man, N. Y. and Lond., 1923.

[8] Retzius, Anders Adolf. Anatomiens uppkomst och utveckling i den Skandinaviska Norden. Skrifter i skilda ämnen, m.m., Stockholm, 1902.

[9] Retzius, Adolf Anders. Skrifter i skilda ämnen jämte några bref af Anders Retzius. Samlade och utgifvade of Gustaf Retzius, Stockholm, 1902.

[10] Retzius, Gustaf. Självbiografisk skizz. Autografin och porträter af framstände personer. Ser. 3, vol. IX b, Stockholm, 1892.

I remember even yet so well how a large human skeleton stood beside my bed, and how in the window were placed aquaria and jars with lizards and tree-frogs, indeed one of the bellowing giant frogs of Brazil, which when it got loose made room-high jumps. There were casks with young salmon-fry, whose further development my father studied. And each Spring when the ice broke up, he took me with him to Kungsholmbrunn, where we clattered down on the stone piers to the water's edge and gathered small water animals, infusoria, bryozoans, and worms, which we took home to the aquaria. I shall never forget my father's enthusiasm when he observed under the microscope the wonderful life which was unfolded in the water of these aquaria, and of which he with his spirited descriptive art tried to give me an inkling. I shall never forget his burning interest, his love of truth and the alert, keen look, concerning which a foreigner one time said that in case there was any proof needed for immortality, Anders Retzius' glance was such a proof.

Retzius was concerned not only with the problems of morphology and kindred purely scientific subjects, but as may be inferred from his contributions to topographical anatomy, he had an interest also in the practical applications of anatomical knowledge. His practical bent is further indicated by his horticultural experiments in introducing many new plants into Sweden. At about the same time as his contribution to the histology of the teeth was published there also appeared from his pen an essay on the castration of cattle. He describes the operation which he performed with his own hands on two young bulls, and closes the account with a plea "to our enlightened farmers to undertake experiments and make the results known." No doubt his early connection with the veterinary school gave direction to a part of the practical side of his nature.

Erik Müller, to whom we are indebted for much that precedes, and who has had intimate access to the papers and writings of Retzius, says:[11]

Naturally the scientific work of Anders Retzius, as of all, has its weak points which furnish material for the critical and carping judgment. It may be noted and even has been noted that his work is not sufficiently consecutive, inclusive or thoroughly done. In part such a statement is justified. His notes show the quick understanding by short-cuts in his scientific works which is a result of his mind's activity, which could degenerate into a sort of uneasiness that made it difficult for him to longer sit still engaged in one task. He himself acknowledges in the most good-natured fashion that he lacks much as a writer. He writes in 1827 to Florman: "It comes to this, that I am a poor scribe, it costs me much trouble to write, for I received less foundation in language than I could have wished." And in another place: "I am a poor grammarian and must therefor let my essays lie long on the digestion-shelf before I let them leave me."

His originality, his keen insight into morphological problems, his ability as an explorer in the unknown regions of knowledge, must to the thoughtful mind more than compensate for the fact that he did not always map out in detail the discovered regions. The details, to his mind, could be left to others, even though another thereby might receive the credit which he himself justly deserved. His chief concern was the advancement of science by the widening of its boundaries.

Retzius' influence on anatomy and medical science in general in his own country was even more strongly marked by the effect of his character and his knowledge on his students and contemporaries. Through his personality and his methods of teaching Retzius drew students from the University of Upsala and from Lund for his courses in anatomy, in spite of the fact that at that time the Caroline Institute did not have the power of conferring degrees, and these students must therefore return to their universities for examination. Many of the students so attracted had already completed the prescribed courses and came to Retzius, not to prepare for an examination, but from a desire to study under thê stimulus of his spirit.

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[11] *Vide* NOTE 4, p. 18.

Retzius introduced the teaching of histology and comparative anatomy into the medical curriculum in Sweden. He writes: "In the Autumn of 1824 I began a course in microscopic and general anatomy for about twenty auditors, and continued in the Spring months with comparative anatomy, while in the meantime presenting the descriptive anatomy on the human cadaver." In all his teaching it was his effort to train his students to see and to think for themselves.

At the beginning of his connection with the Caroline Institute he had very little in the way of museum or demonstration material. He writes[12] that in moving the anatomical collections from the old site of the institution on Riddarholmen to the new location, which it was necessary to do by boat between the two islands, the greater part of the collection fell into the sea. The small part that was recovered was so damaged by water as to be useless. Through the interest of the crown prince, supplemented by the efforts of Retzius himself, a museum was again gradually established.

The picture of Anders Retzius as the anatomist, teacher and public-spirited citizen is incomplete without a further glimpse of his personality, which we may get in part by quoting again from the letter already cited,[13] written by his son Gustaf Retzius:

> Only a single time was I permitted to hear my father lecture in his auditorium. . . . He lectured on the trachea, its structure and function. With a vivacity which for a man of sixty years must be thought phenomenal, with a youthful verve and enthusiasm, of which few teachers even in their prime are in possession, he gave an illustrated picture of this organ's wonderfully simple, yet so ingenious structure, and its great importance for mankind. He entered with all his might into his subject. His mobile features made clear the shades of meaning with a clever mimicry. His hearers followed with intense attention the by no means arranged, but all through, spirited exposition. One immediately caught the contagion of zeal and laughed heartily at the original fancies which spiced the lesson, which had quite a different form from that of the ordinary dry lecture. I have often since reflected over it and seen that in such manner lectures may have much greater influence than as ordinarily given.

Another setting is given us by Erik Müller. This pictures Retzius in his orchard, from which he appears to have found his chief recreation. We see a man small of stature and slight of frame, in simple working clothes, but with the distinguished mien of the patrician, who with mattock and spade labored diligently in his orchard. "It was the Institute's Inspector, who between making preparations and giving his lectures, in this manner sought outlet for his love of activity."

The Caroline Institute of Medicine and Surgery, in whose service Retzius spent the greater part of his life, and with whose history his name is inseparably bound up, had been in existence but fourteen years when his connection with it was established. It was therefore still in its infancy and Retzius had largely to make his own place and conditions of work. It was in some measure due to his energy and his excellent example, as well as to his administrative ability, that this institution whose faculty now has the honor of awarding the Nobel prize in medicine, has come to occupy the position of distinction which it now enjoys. Retzius was the pioneer in the northern countries in teaching the new spirit and methods of anatomy, which have borne so rich a heritage of knowledge, not only in his own country, but throughout the world.

He was the founder of craniology as a distinct branch of anatomical science, and he was a pioneer in the new morphology, as well as in histology. Because of his contributions to these branches, as well as to other fields of anatomical science, Anders Retzius earned for himself a place among the foremost of the anatomists and anthropologists of the nineteenth century.

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[12] *Vide* NOTE 8, p. 22.

[13] *Vide* NOTE 10, p. 22.

DE VENENIS OF PETRUS ABBONUS

EDITION OF MCDXCVIII

A TRANSLATION OF THE LATIN*

By HORACE M. BROWN, M.D.

MILWAUKEE, WIS.

BENEVOLE LECTOR [BEING THE SELF-DEFENSE OF THE TRANSLATOR]: *Many years of arduous labor in the practice of the profession of medicine, with all its burdens, confusions and exigencies, have taught me that there are few things in life that are pleasing to do, or pleasant to perform, that are done with any object in view. In other words, the only things that are worth doing are those that are worthless.*

I can imagine few less useful labors than those of putting into English such a book as the "De Venenis" of Abbonus, unless it be that the mental gymnastics required in such a labor are of value, just as any intricate problems of chess may be of value as stimuli in a new direction, for a mind worn with many routine cares. Let that be my excuse for the production of the libellus which follows. I have no doubt it contains many mistakes and poor renderings of the barbarous Latin of the century in which the original was written. In the original there are many words that are not to be found in any Latin lexicon, nor yet in Du Cange nor in Maigne D'Arnis. Let the gentle critic who chooses to cavil at my efforts, rejoice in his superiority of knowledge. I have done a useless thing and have laughed. The laughter is my reward, his may be the sour satisfaction of dissent. It is a matter of taste, and "de gustibus non est disputandum."

I hope the notes and words and phrases in parentheses may serve to illuminate some shadowy points of view.

HORACE M. BROWN, M.D.

A SKETCH OF THE LIFE OF PETRUS DE ABANO (PETRUS APONENSIS, PETRUS DE APONO, PETRUS ABBANUS)[1]

Petrus de Abbono, as he is called in the 1498 edition from which this translation was made, was born about 1250 (1246?) not far from Padua in a village named Abano. We know nothing of his parentage or their station in life. His early desire to perfect himself in the sciences led him to leave Italy when very young and to seek in other lands that were farther advanced in learning, such facilities as would give his ambitions a chance for fruition. He went first to Greece and then to Constantinople where his pursuit of the study of the Greek language soon made him a master of its use. From Constantinople he went to Paris and there devoted himself for many years to the study of philosophy, mathematics and medicine. It was at that city that he received his doctorate in those sciences. The University of Padua having learned of the capabilities of Abbonus and of the knowledge that he had acquired in France, being without a professor of medicine took advantage of the opportunity and the reputation of the man to call him to that school under conditions that were most advantageous to him. From this time he taught at Padua with the greatest success, but still did not deprive himself of the chance to increase his wealth through the practice of his profession. His reputation and his success brought upon him the attention of his envious competitors.

The extent of his knowledge, prodigious in view of the deep ignorance of the period, his attachment to astrology and mathematics, caused him to be regarded as a magician, not only by the common people, but also by his colleagues in the faculty. Due to his reputation as a wise man and his cognizance of the occult arts he was considered the greatest personage of his period. His enemies, jealous of his success and profiting by the laws against astrology and magic, drew upon him the persecution of the Church and the authorities. It was claimed that among other magical powers, he was able to have all the money that he spent returned to him.

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*Being an effort to preserve the form, while rendering the meaning of the original. September MCMXIX. With notes and elucidations.

[1] Translated largely from the Dictionaire historique de la médecine of Dezeimeris. Paris, 1828.

A physician named Petrus de Reggio was the first to attack him upon this charge and succeeded in having him brought before the Inquisition as guilty of heresy and necromancy, but Abbonus escaped through the influence of powerful protectors. In the year 1306 he happily succeeded in clearing himself of this accusation of his enemies. After a lapse of nine years the detractors of Abbonus again brought the same charges against him, and the Inquisition for the second time took up the matter, but fortunately for him, he died during the course of the trial, in the year 1316 at the age of sixty-six (seventy) and was buried with due solemnity in the Church of St. Anthony at Padua.

However, the Inquisition did not cease to pursue its investigations: Abbonus was condemned, and it was ordered that his body should be exhumed and burned publicly. This was not done, for a maid-servant, Mariette, removed the body secretly at night and carried it to the Church of St. Peter, where it was placed in a tomb that was found open. Nevertheless the inquisitors were not satisfied and in default of a body, they burned an effigy of Abbonus in the public square of Padua.

The crime of Peter was his merit and that helped make his reputation. He passed for a prodigy in science. One thing in particular tended to establish his high reputation; this was his vast knowledge of astrology to which he had applied himself in particular as his writings show. We may be convinced of this by the more than four hundred astrological figures which he had painted in the year 1313 upon the vault of the Hotel de Ville of Padua. They were destroyed by fire in the year 1420, but were repainted by Giusto.

A LIST OF THE WRITINGS OF ABBONUS AND THE DATE OF ISSUE OF THE FIRST PRINTED EDITIONS

Conciliator differentiarum philosophorum et praecipue medicorum. Mantua, 1472.
De venenis eorumque remediis liber. Mantua, 1472.
Expositio problematum Aristotelis. Mantua, 1475
Hippocratis de medicorum astrologia libellus ex Graeco in Latinum. Venice, 1476.
Textus Mesue emendatus Petri Apponi medici in librum. Venice, 1505.
Astrolabium planum, in tabulis ascendens, continens qualibet hora atque minuto aequationes domorum coeli, significationes, etc. Venice, 1502.
Joannis Mesue additio. Venice, 1505.
Decisiones physiognomicae. (?) 1548.
Geomantia. Venice, 1549.
De Balneis, Venice, 1553.
Many translations from Arabic and Greek, which appear in various collections of writings.

HERE BEGINS THE PROLOGUE OF THE LITTLE BOOK BY THE MOST EXCELLENT MASTER-PHYSICIAN PETRUS DE ABBONO, CONCERNING POISONS; WHETHER MINERAL, VEGETABLE, OR ANIMAL, OR ANYTHING SOEVER EXISTING UPON THE SUB-SOLAR GLOBE; EMENDED BY THE VENERABLE MAN WILHELM HALDENHOFF OF THORN, DOCTOR IN ARTS AND MEDICINE TO THE GRAND-MASTER OF PRUSSIA, AND PHYSICIAN OF THE DIVINE TEUTONIC ORDER.

To the Most Reverend Father in Christ, and our Lord: Petrus De Abbono, least of physicians, by the Divine Providence, physician to the Highest Pontificate, with devotion, begs that he may inscribe this tractate concerning poisons, not only that your wish may be fulfilled but that a debt may be solved, and that it may be not less useful because of its brevity, but may serve, not only for the preservation of your body, but as gathering together all that is known upon the matter.

First: I shall make a division of poisons for the reason that they may be better understood if the whole be divided into its parts.

Second: Each division of the members I shall explain at the end separately, so that the knowledge in regard to each thing is completed by descending from the most general to the most special.

Third: I shall describe the manner according to which poison mortifies and induces harm to the human body in the first place as medicine, and next note the nature of the treatment by the art of medicine, of the one poisoned.

In the *fourth* essay I treat of guarding against poison and the cautions to be taken whether poison is given in a drink or if drunk, that there shall be no harm; for *præcustodia* is the art of curing by protection.

Fifth: And in this division I describe the symptoms and treatment with each poison taken, and also of its harmful action when taken.

Sixth and last: Of the bezoartic virtues; *i.e.*, its liberating from death, rather by its hidden and divine powers, than by its complexion or nature as regards whichsoever poison I may describe; the first of which will be concerning the theriaca magna, whether the theriac be a bezoar or a medicine to a (any) poison, and the second will be, whether any poison can be employed in such a way at a certain time, that on account of it, he who has taken it will die at an appointed time and not before.

CAPITULUM I

Concerning the Division of Poisons

Since poison is opposed to the food of our body, therefore, just as food is of benefit for our body and assimilates itself by its nutritive parts, taking the place of the parts of the body that have been dissolved away; just so our body or the parts of it with which poison comes in contact, draws the entire poisonous nature and changes it so that thereupon it assimilates it to itself in the same degree (manner) as animals and things born of the earth: of which things our food is made, and being eaten, are converted into nutritious material, being assimilated, become our aliment and our form and figure.

Thus whatsoever bodies are joined with poison, if they be eaten by us, they make a change of our bodies into poison, the action of all of which is clearly manifest: as for instance, our substance in a passive manner changes into poison and becomes in an active manner of the nature of poison, just as when chaff is exposed to fire, the chaff becomes actively all fire; wherefore all wise physicians say that poison is of the things of a killing and destroying complexion and composition and at the same time inducive of the solution of continuity, so that the sick dying of poison, are of a common class and not of a particular. [In other words, they die from the same pathological changes and not of any special kind of change.]

Poisons are classified in three forms. Now one may be considered, which is so that the division may be from the general to the species (kind), and in accordance with this method Avicenna and Averroës have said that one kind is from mineral, another from vegetable, and a third from animal origin.

As to mineral substances: Indeed, it is true that whatsoever things are generated from out of the earth have a pernicious nature; as for instance quicksilver and gypsum and certain stones, as magnetic stone, and unwashed armenian stone, and burned lead and arsenic, and realgar, and ceruse or plumbi carbonas (white lead); and so of many others concerning which it will be spoken later.

As to vegetable substances: There are some plants which are most contrary in nature to foods and not aptly formed to be converted into nutrition for the race, and are accordingly quick to turn against it; such are hellebore and turpeth nigrum, napellus and gum of napellus, and certain fungi and mushrooms (tubera-morels), and *viduam faciens* [literally "widow-making." What the plant may be I have been unable to discover.], and mezereon and oleander, *apium risus* and many others of which mention will be made later.

As to animal substances: The poisonous ones are all from those which are by nature farthest removed from the likeness to the human race or which are inimical and opposed to its species. Of these are the vipers, serpents and dragons (lizards), and *thiri* (a kind of venomous snake) and the *lepus marinus* (a poisonous sea-fish of the color of a hare), and meats roasted and smothered (*suffocata*) in dough, and cold fish (stale fish), and mortifying and putrid meat, and that which is struck by lightning and killed, and whatsoever animal suffering from rabies, and many others which will be specially spoken of later.

The second division to be considered is as to poisons related to us; and as to this it has been said: One poison is received within the body and another is received from without, that which is received within the body is in general through pernicious potions given in some form of food, or drink or medicine, and this is what most often occurs; on account of which many kings and prelates and those who are hated, have cause to be fearful.

What is meant by receiving it from without? It may be said to be when poison is felt, as from the bite of a reptile; or when by sight or hearing, or taste, or touch or by smelling. By sight as when the *basiliscus* causes poisoning. By hearing as when one is poisoned by the sound of a certain serpent in Nubia, which is of the thickness of two palms, having a sharply pointed head, and of a greenish color, and which is called the regulus. When birds and animals hear his hissing they are killed. By touch also, as with the deaf asp, for that those that he touches with his spittle, die. And the *thirus*, for that those that he bites, he takes their life.

As to touch: As with the soldier of whom Avicenna speaks who killed such an one with a lance, and by contact with the lance, his hand and all of his body was mortified. And as with a certain fish which is called "stupefactor," of which Galen speaks; which when it enters the net, the hand and arm of the fisherman is stupefied, in so much that it becomes insensible. By odor as well; as says Rhazes, in the case of certain pernicious fungi; the searchers of which are killed by its odor when they tear it away from the earth or the place in which it grows.

The third matter to be considered is as to how much poison is required to produce the specific difference by which one poison differs from another. And concerning this matter, all the physicians and natural philosophers have written. How many poisons are there? Another is, whether it produces its effects by its quality or by its composition; and another is whether it produces its effects by a pervading virtue which physicians call the specific form, which is nothing else except it be a certain composite gift which each draws and receives from the four elements in accord with the greater or less proportion of these elements in the composition, and from the influence of the fixed stars, which the various sorts of inferior compositions receive so that their material is made apt for flowing (or made fluid). In like manner these powers of the stars are brought downward by means of the pyramidal and straight lines which in the light of these stars are contained, so that the light sent out by the divers lines from the stars, brings with it specific virtues (qualities) which it leaves in them in accordance with the capacity of these compositions to receive them.

And this is what Avicenna has rightly said in his "Canons," that such a specific form of things arises because of the original character of the elements in the composition, and since we never know, and may never know the quantity and weight (value) of the elements in composition, or such specific forms arising from such or such a measure, and such and such proportions in a composition, it remains that such ignorance is necessary, and that we can never know concerning them except in so far as may be given to man by experience; and for this reason more is to be acquired by experience than by the reasoning of physicians, as has been said by Aristotle in the "Prohemio de metaphysicis."

Therefore poison which acts only by its qualities varies in accordance with its difference in its qualities. For one may be hot, another cold, another dry, another humid. If hot indeed it causes death, for if it is taken internally it corrodes by its heat even to the heart, if it be applied exteriorly, even to the medulla of the bones;

and if it kills by solution, that is progressive, as in the case of the *lepus marinus*, it inflames by heating both within and without even to the heart, and thus it destroys the substance of the heart, and thus it is with euphorbium and hellebore.

If it be a cold poison, it destroys in two ways, that is to say, either by doing harm on account of its great frigidity until the heart is rendered immovable, and thus it is with things such as opium; or by stopping up and closing the ways for the breath, so that they (the poisoned persons) can hardly breathe, the breath is drawn away from the heart, and thus it is with *plumbum ustum*.

If it be a dry poison it kills by two methods; that is to say, by consuming the moist blood of the heart and almost converting it into a crust, and thus it is with unslaked lime (*calx non extincta*), and colchatar (Arabic: colcotar or colcatar, defined by Bellunensis, as *atramentum* or *vitriolum citronum*, sulphate of iron) or by separating part from part until every member even to the heart and the smallest parts cannot remain soft, but all are dissolved; and thus it is with realgar.

A humid poison, as is said by certain physicians, is not so found; as humidity does not ascend to the fourth degree, and the fourth degree furnishes the poisonous quality that being corruptible, is mortal.

Thus Galen tells of a certain man who while sleeping was bitten by a certain serpent, and being alarmed and not able to rise, held by the hand, he remained upon the ground with the flesh corrupted and putrefied so that the bones appeared, whence he proves the existence of occult putrefaction and easy solution of the flesh. Galen believed quicksilver to be humid and of that group. According to others, quicksilver is the only true poison of the moist complexion and of the fourth degree.

Accordingly it is a poison which by its solvent power against all kinds or species of things, or by its specific form, produces death, not that it is hot nor yet cold, nor dry nor humid, but that it is such because it has an opposite virtue to the life and health of man, and this poison in whatsoever small quantity taken, if so that the sense is destroyed, it kills, multiplying itself, since wherever it finds the humidity of the body it converts it into poison at once, and thus its specific power is of the same character as that of napellus.

CAPITULUM II

CONCERNING EACH POISON IN PARTICULAR

I shall teach of special mineral poisons and of those of plants and of those of animals, only speaking of those known and assured, and not of those stories of the mysterious poison of snakes, but only about the origin of it; thereby, by these things that are written doing less harm; and shall not, as others have done, teach harmfully.

Therefore concerning mineral poisons: Some are produced by nature, some by art. Concerning those that are natural, some are generated in the bowels of the earth; such an one is quicksilver, which taken internally, when it kills by its humidity, it causes to be destroyed the natural humidity of the heart; when it kills by its actual frigidity by congealing the heart; the proof of which is that a certain apothecary, rising in the night, under a great thirst, found a bottle full of quicksilver which he drank, and he was found dead in the morning, and the quicksilver running out of his anus.

He was anatomized, and the blood about the heart was found congealed and his heart also, and there was found in his stomach almost a pound of quicksilver.

Another is quicksilver which may be sublimated in the *alludel*, which is a vessel used by the alchemists; and this is worse and more pernicious than the natural, since the mineral often finds its way out of the belly, or is removed quickly by means of clysters, but that which is sublimated, when taken interiorly, corrodes the intestines and suppurates the heart, and the urine is retained and its exit is prohibited and the patient dies.

If quicksilver be extinguished (reduced to impalpable particles) by admixture strongly with human saliva so that it disappears, and then if hot water be cast upon it so that it returns to its first condition and is not extinguished, it is then more powerful than pure quicksilver, and less evil than the sublimate.

The second poison which is of a mineral nature is gypsum, which if taken inwardly, its frigidity coagulates the blood and dries up the spirit, and induces difficulty of breathing, and after that death; but if this be powdered in the crude state and be given in a drink, boiled, it is not a poison, but is a styptic medicine; however, it produces strange earthy masses in the veins.

The third is copper. (*Aes:* copper ore, dross of copper, copper oxide, dross or *scoria* of copper.) This metallic substance has a nature composed of quicksilver and burned sulphur, tending to a reddish color, and when it is hammered or worked by smiths, the scales that fall from it, when given in a drink cause poisoning and bring about a great solution of the belly, and this (the scales) the physicians call "tubel eris." (Arabic: Tubel, a scale.) These also if they remain with quicksilver[2] (wine) in a vessel of bronze or of brass or of copper, and are drunk, it causes vomiting.

The fourth is *scoria ferri eruginosi* (rusty slag or scales of iron) and its rust, which taken inwardly, by sticking to the intestines, both dries up the humidities of the body and induces senility, that is, a certain disease which the physicians call marasmus, but yet the *scoria* of iron is used by physicians, in a mitigated form in the treatment of many diseases.

The fifth is the magnetic stone, which taken inwardly, makes the recipient melancholy, lunatic and swollen up ("pistrigiatum")[3] However it is used by physicians, when modified with other medicines in the treatment of melancholia. There are however, two forms of this stone. The first is that which draws the iron toward the pole, where there must be the magnet mines. The other draws the human flesh, pulling it toward the south pole, where it is said there are mines of it. This also when crushed and given in a drink contracts the viscera and makes them into a ball.

The sixth is the Armenian stone. (Lapis Armenius, melochitis, blue carbonate of copper. It would seem that Abbonus had never seen it, for he calls it red.) This when taken internally, if it be not washed in accord with all of the rules of the physicians, is a vomiting poison and subversive of the whole body, but properly prepared it is of value in the treatment of the melancholy passion.

The seventh is the stellate stone (*lapis stellatus, lapis lazulis*) which if it be not washed and if it be given in a drink, produces vomiting (*subvertit stomachum*) and makes pain in the intestines; but it is used by physicians against a quartan fever.

The eighth is arsenicum or auripigmentum, which is a species of gypsum. (Auripigmentum: orpiment, arsenic trisulphide.) Albertus says that by its heat, dryness and pernicious nature it is the worst of poisons both putrifying and mortifying greatly; but if it be sublimated according to the (methods of) alchemists, in the vessel called alludel (Arabic: aluthel, an alembic) it is most evil as a poison taken inwardly; but if it be often sublimated it becomes very white and is so much more poisonous.

Now as to the poisons that are produced by art, like litharge, which is made from lead fused in a pot with fragments of broken tiles, which being taken inwardly, dries up the intestines to such a degree that the bowels cannot move, and those things that should come away by defecation are voided by vomiting. Again there is ceruse, which is made of plates (of lead) laid one upon another and in vinegar, and because of its frigidity and dryness, when taken inwardly, it causes contractions and palsies; and there is calcecomenon, *i.e.*, *viride eris* (verdigris) which is made out of plates of copper exposed above vinegar, which is a corrosive and mortal poison. And there is burnt lead, made from sulphur and auripigmentum, which is a poison that shuts off breathing, killing by suffocation; and azure, which is made out of lapis lazuli, which is an exsiccative poison.

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[2] It is a question whether Abbonus means to say "quicksilver," or "wine." There is a bad misprint at this point in the original. Boet (1593) uses the word "wine." He is probably right.

[3] The word is indefinable and unfindable, but its meaning by analogy may be considered to be either forgetful, lean or bloated. The last is probably the meaning in this case. See p. 50.

And also there is realgar which is made of sulphur and lead, a most corrosive poison when taken inwardly.

As to vegetable poisons: Some are the juices of plants, some are the fruit of trees and some indeed the seeds of both plants and trees. These are the juice of cicuta (hemlock); titimalorum (spurge); cucumeris asinini; usnea (certain mosses); bothomarin (cyclamen); corianda; mandragora; papaveris nigri (from which opium is made); corigiole lactantis (from which scammony comes); apii risus (a kind of parsley); cherve (that is girasolis); napellus (aconite);[4] oleander; mezereon (daphne mezerium); helleborus niger; alfessire, i.e. vitis albae; brionia, i.e. curcubita silvestris.

As to the fruits, there are the spines (cornua) of oleander; bedeguar, Arabic; bedcoar, spina alba; anacardi and its nuts (this is the cashew tree); rancid hazel nuts (corylus avellana); nux vomica, and coloquintida (colocynth) which grows single upon its tree, and ficus pharaonis (the sycamore fig. Ficus Aegyptica) and the mandragora apple.

As to the seeds, there are jusquiamus, (hyosciamus); cochognidii (laurel seeds); bacci laurae rancidae; catapuciae (castor oil plant); and the seeds of urtica; papaveris niger; helleborus; cicuta; moist coriander, and serpentaria, all of which, either eaten or drunk, kill in the manner above written, or else weaken and alter the body.

As to the poisons from animals: There are certain that are found in the brain of some, in certain, in the blood, in certain others in the tail, in certain, in the saliva and sputum, in some in the bile, and in certain others in all parts of the body. In the brain of the cat indeed, is a most pernicious poison which makes a man out of his senses, and it is the same with the brain of a bat. Also in the tail of a deer is the worst form of poison, on account of which hunters cut off the end of the tail of the deer when they desire to eat of its meat. Similarly, in the tail of scorpions and rutellae (a kind of red beetle, the "earwig" of the English) and in wasps and bees, and in the fat of certain animals and of certain serpents. In the blood indeed, as in the blood of an old bull, and in the blood of toads and their spittle and in the blood of an angry red-haired man, in a state of fury, and in the menstrual blood and in the blood of a leper. Again in the saliva or sputum of a fasting man, not poisonous to the man but to the scorpion and the serpent. Also in the sputum of toads[5] and

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[4] See note, p. 37.

[5] Note. "and the saliva of the viper, who when he desires to copulate (join) with the fishes, deposits his poison upon a certain stone on the shore, and afterwards, returning, he re-collects it." The original is as follows: "et saliva vipere que coire vult cum pisce venenum deponit in littore super lapidem quendam: deinde rediens suum colligit venenum." There used to be a popular belief among the people of southern New England, that eels were the offspring of fishes by snakes.

To Aristotle is assigned the statement that the viper cohabits with the sea-urchin. This upon the authority of the commentator (Joannes Cammers) upon Solinus. "Pro Plinio et contra Albertum est Aristoteles in *eo libro,* quae jamjam citavimus. Ejus verba libuit subscrivere. Echidna (inquit) piscis est maritimus cum qua ferunt Echin viperam serpentem quendam nigris intinctum maculis coire plerumque consuevisse." *et. seq.* (*Commentaria* in C. Julii Solini Polyhistora. Basle, Petri Henricum. 1557, fol. 65.)

The book referred to, is the "De admirandis," which it is not certain that Aristotle wrote.

I have sought quite thoroughly to find some reference in Pliny to such a habit on the part of the viper, but without success. It is probable that there is such the saliva of the viper, who when he desires to copulate (or join) with fishes deposits his poison upon a certain stone upon the shore, and afterward returning, he recollects it; and in the saliva and sputum of a rabious dog, and in the saliva of the monkey-cat (cercopithicus) and of the mouse and of a fasting man, through his bite.

As to bile, in the case of the bile of the leopard, which is a poison because of its specific form, at once causing death.

As to bodies wholly poisonous, such as cantharides and the salamanders, concerning all of which the best opinion is that this poison kills either because of its quality or because of its specific form.

CAPITULUM III

How We May Understand the Method Whereby Poison Harms and Kills

Now every poison in its degree as a poison has an opposite quality in our bodies, and this opposition makes a great doubt as to how, and by what way the poison is able to pass to the heart of man.

For either the poison is drawn to the heart, just as iron is drawn to a magnet, or it goes of itself to the heart, in other or both ways, namely, the heart attracting it, or the poison running to the heart; but if neither or none of the aforesaid methods may be defended, we must admit that in no way can the poison pass to the heart, and so the question of the opposition of the poison to the heart itself will cease; in which case we may say that the poison is not destructive to the heart. Opposed to which we see that if a pernicious poison like napellus is taken, at once syncope appears, which is a passion of the heart, and there is tremor of the heart and defective pulse and all of the symptoms of cardiac passion, on account of which it must be known that the heart when it is sound, like the other members, attracts to itself nothing except blood, and at the same time the spirits, of which one remains in the right ventricle of the heart, and the other in the left; but when it is infirm, it draws to itself the contrary quality, harmful to it, just as when it is overheated, it draws to itself cold air and by this makes the blood cool by its natural attractive power, in the same way so long as it is in the state of nature, and because of that sensitive animal desire that makes every irritated member both long for relief, and to feel in harmony; and opposed to its injuries, therefore as it (the poison) in no wise participates in the complexion of the heart, and by nature is not attracted by the heart itself when it is sound, on the contrary it repulses it as if inimically opposed. When the heart may be infirm, because of its sensitive longing it desires the thing, and attracts its contrary by its desires, and in accord with this manner of action poison is cured by poison; for when any poison has been taken, for instance opium, which making the body cold even to the heart, and then coagulating the blood, by which death is brought about before the heart gives up its power: because of the frigidity of the opium (the heart) feeling its harmfulness, it desires a hot medicine, and if castoreum be given, which in itself is a sort of poison, the heart attracts this same castoreum because of its sensitive desire, not as a poison opposed to the substance of the heart, but as the opposite of the quality of the opium unfortunately introduced. This explanation demonstrates nothing more than that the heart draws to itself poison just as any of the infirm members draws to itself things of an opposing or opposite quality, for the reason given that the heart when it feels the evil effect of a cold poison, by virtue of its sensitive appetite it desires a medicine that is of a hot complexion, and draws it to it; and thus stands the question as to how that poison first given, is moved to the heart. Wherefore it seems that it may be said that the heart draws no poison to itself since neither

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a citation, and that my inability to find it is the proof of my incapacity. However, in *Lib.* IX, *Cap. li*, I find that the offspring of the Gar-pike turn into blind serpents. Boet, in his translation into French (1593), gives the same meaning to this paragraph.

is poison in any degree similar to the heart, because it has no likeness to it; nor in any wise the contrary, since the heart never was of the disposition that poison is opposed to it, nor can we infer from this that there is no opposition between the heart and poison, since if it be allowed that the heart draws poison, for the poison is not allowed to run to it, nor does it partake of both methods, there remains to give another method by which the destruction and opposition is manifestly shown.

Now since poison is active by its form when it has a destructive and pernicious action on the heart, whatsoever it touches in the human body, it converts the part touched into that form of poison; and this multiplying itself and infecting the humidities of our body by its poisonous nature, in this way the multiplied force of the poison is increased. It is said in geometry, that a doubled quantity augments the power, whence, from the small quantity of poison taken, converting all that it touches into its own kind, the power is increased and multiplied, so that gradually by this increasing process the extremest parts of the body are reached, and if a small portion of the poison reaches the heart it converts it into poison, and from this cause then the vital spirit, not having the proper organ in which to live, makes place for the poison and going out of the heart, it leaves the heart and body without motion, and that is death; the proof of which is if that cadaver be eaten, the poison destroys the thing that eats it.

Yet it must be known beside, that the artery of the heart and the ventricles of the heart, by the motion of diastole and systole, that is, in the natural manner attracting and expelling continuously so long as the animal lives, attracts to itself the surrounding spirit, so that even the arteries which terminate in the skin attract continuously through the pores, the external air even to the heart, and by the blowing out of the heart[6] it expells its heat and vapors, so that if the air surrounding us be poisonous and pestilential, it being attracted to the heart by the dilatation of these arteries, the heart becomes infected, and pestilential sicknesses result, not that the heart or the arteries by their nature attract the poison, but on account of the character of the air, and the attraction of the spirit the poisonous vapor is introduced and in accord with this, the wise men say that it is poisonous to sleep or to linger under a nut tree or in a cabbage garden, and under oleanders, and to bathe in waters upon whose banks the oleander or other poisonous trees grow.

For Galen relates that a certain man, having bathed himself in a bath heated with wood cut in caverns where serpents lived, he died quickly after he came out of the bath, for the vapor of the wood with which the bath was heated was infected with poison.

And Aristotle in his book, "De proprietatibus elementorum et planetarum,"[7] says that at the time of King Phillip, all the travelling merchants who went by a certain road, when they were in a part of the road between two mountains, the one on one side of the way and the other opposite to the first, suddenly died. And then Socrates made to be prepared a cave of glass, and entering which he caused himself to be carried to that place, where he discovered two serpents, one in one of the mountains and the second in the other, who had infected the air in that place so that those who were dead were killed by it.[8]

Again in the old times the kings caused a girl to be nourished upon napellus, and from her embraces and breath, those who copulated with her were killed; similarly in the bilge-water of ships and in deep caverns, and inhabited places and in fetid places, on account of the attracted air the dwellers therein are poisoned.

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[6] Systole.

[7] Aristotle. De causis proprietatum elementorum. *Cap.* 1 *circa finem.*

[8] In the original the story differs somewhat from Abbonus' narration, for it was a tower and a mirror of steel that was used by Socrates.

And also Avicenna: In *Capitulo primo,* (states) that no thing is more inimical to the innate heat and the heart, than a great fetor, on account of which the vital spirit recedes from the heart; and in just so much as the complexion of the heart and of the arteries may be hotter and rarer, so much the more quickly poison, whether drunk or breathed, destroys and kills, since the hot heart attracts more than the cold of the breathing, for the passageways are wider in the arteries for the heat of the heart than are those for the cold, so that jusquiamus (hyosciamus) will not kill sparrows on account of the narrowness of the passages to the heart; with man however, it is thus, since they have wider passages by way of which it is easier for the movement of the poisoned spirit. In so far as the poison is of itself of a more hot complexion so much worse is its action in a man of hot complexion, since both of the calidities act to the same effect, but when given to one of a colder nature, its action is delayed. Nevertheless so great may be its natural heat that it may overcome the heat of the poison and repel it and its harmfulness or death, and for this reason that, of many men partaking of a poisoned food at the same meal and in the same quantity, some will die, others will escape death, while in others it will only produce excoriation or weaken them; just as I at a certain time, saw at a certain meal four to have been poisoned, all eating of a poisoned dish; one of whom was dead immediately, another was entirely unaffected and the other two indeed were weakened near to death.

He who escaped was of a spirited nature and with a hot heart, but he who died was of a less warm complexion, and those who were rendered weak were of a warmer complexion than he who died, but less so than he who escaped. This then cannot be otherwise except because the heat of nature which shows itself in the form of life, resists in so far as it is able, as well to the accidental heat, whether it be the heat of fever or that of poison, as to the pestilential heat of the air and the heat of summer and of the dog-days, which all work toward incineration and dissolution of compositions (composite bodies).

Hence Avicenna says in the first chapter "there is nothing which resists the evil qualities and the heat of fever more than the innate heat," hence it is that the heat of poison repels or resists, not by its complexion but positively (*formaliter:* by its form or nature) because the natural heat, when formed, is regulated by our soul which incites toward life by means of the natural heat as though it were its instrument, and therefore it is said that every work of nature is a work of intelligence, being produced by it, whence it is truly said of nature concerning heat, as well by philosophers as by physicians when they speak of natural heat and not of natural frigidity; and likewise as says Dorachius, the Astrologer, as to Alcocoden, that is, as to the constellation and the place in the heavens that is called "the giver of life."

But a frigid poison given to a man with a cold complexion by the combination of the frigidities, kills quicker than when it be given to one of a hot complexion. But if the poison be of that kind that destroys both forms, such as napellus and its gum, and the bile of leopards and tyrus (a kind of poisonous snake, a viper or adder), then the complexion of him drinking the poison in no way impedes the poison or gives relief, except in so far as in men of a hot complexion, the vessels are wide for its passage. In those of a cold complexion these are narrower.

CAPITULUM IV

Concerning Avoidance Against Poisons Being Taken, or If Taken, that They Do No Harm

If it be feared or suspected that poison has been taken either in food or in any drink, it is necessary that two regimens shall be followed. First is the protection by caution. The second is the destruction of the poison taken, with its power.

Now protection means that before eating, it should be your wont to have openly upon your table with the food and drink, things which have the faculty of discovering and showing forth any poison which may be present. . . Of these things, one is the scales of serpents, which sweat at the approach of such poisons as napellus and thirus and leopard's bile, and not in the presence of any other poisons.

And there is another which is a certain stone named prassius (prasina, in medieval Latin, sometimes meant, emerald; sometimes, green-stone, green chalk) which is the matrix and capsule of emeralds, because in it they are found, and it has a dry and reddish (*sic*) green color, and sometimes it is found with red flecks, some with white, and it has power to preserve kings from poison, for if that stone be upon the table on which poison is placed, in the presence of the poison it will quickly give forth light; and the poison being removed, the light returns to it. Of this stone it is said in the letter of Æsculapius, the philosopher, to Octavianus, that it fears poison and strife, whence Alexander of Macedon often carried it in battle, and when he was returning from India, bathing himself in the Euphrates, he laid down his belt on which the stone was suspended and a certain serpent cut it off with his bite, and vomited it into the Euphrates, and concerning this, they say Aristotle has made mention in his book "De natura serpentium."[9] And another is that written of in the book of the Persian Kings, where it is said that if you shall let be carved in the stone called hematite, a kneeling man with a snake around him, its head held in his right hand, and its tail in the left, and if you will mount this stone in a ring of gold and under the stone you will place a portion of the root serpentaria, powdered, and will wear this ring, you will be preserved from all poison, which I myself have had prepared and have used for the above mentioned purpose.

Everyone should avoid having wine brought or standing open in wine cellars, nor should any wine be left open, for naturally every poisonous animal laps up wine and licks the vessels in which wine is stored and sometimes they are found drowned in it.[10]

Food is to be avoided and also drink and confections that are of very sweet flavor, or very much the contrary, or of unusual and diverse flavors, since in these, poisons may be easily concealed.

An emerald is the best, but if a toad is procured it is sufficient, for his eyes snap in the presence of poison, and if he is placed upon a table in the presence of poison he weakens it, and if he takes poison in his mouth, because of its infection he puts it out; and if the strongest poison be given powdered in a drink afterward, it is not deadly even if it be of the quantity of two scruples, which I myself have known, and Avenzoar confirms this, as has been written in the book translated for the Pope Boniface.[11]

One may eat frequently before any meal, chestnuts with dried figs, or rue with filberts, and green nuts with rue, or dry nuts with dry figs or fresh sweet flag, or the same dry with fritellæ (cakes made with flour, oil and herbs), or the root of diptamen powdered and drunk with wine. (Diptamen: probably pyrethrum, sneezewort.) One should guard himself from all poisons by having drunk, the stomach being empty, the best pure wine in which, at the time when it was young (*tempore musti*) in each measure (a doubtful quantity) of which, two living serpents were suffocated: and it is a proved thing that he shall be preserved from all poison who shall take each morning, two drachms of the thiriac that is called terra sigillata, which may be made thus:

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[9] Perhaps Abbonus refers to Aristotle. Historia animalium, VIII, xix.

[10] Aristotle. Historia animalium, VIII. iv. "Serpentes vini incontinentes etiam sunt. Proinde Aliqui fictilibus, ad sepes disposito venantur, ebriæ enim capiuntur."

[11] Boet (1593) renders this "au livre envoyé au Pope Boniface." I think he is wrong.

Recipe: Laurel berries, drachms iv; terra sigillata i drachm; these to be crushed together and mixed with clarified honey, one pound, and placed aside in a glass vase. Two drachms of this to be taken at each dose.

Now the destruction of the poison that is taken, may be in this manner. If it be made of a special kind of poison then it may be destroyed by an appropriate medicine for that poison, and such a medicine is called a bezoar (antidote: bezahar) which I signify for each kind of poison in each chapter that follows, by recognizing the signs proper to each kind of poison; and then I shall tell of the special bezoartic virtue for it. If indeed the poison shall be unknown, or the medicus shall be absent, and there shall be doubt as to what may be the kind of poison: at once butter and hot water mixed together are to be drunk, (the patient) forced to vomit and after the vomiting is finished, again by means of butter and hot water or honey, vomiting is to be induced, and the stomach to be strengthened by the giving of the thiriaca magna at once with a decoction of wine in which has been boiled the roots of diptamine, and the dose of the thiriaca may be two drachms, and of the wine two ounces, and he may not eat until after seven hours are passed, and after seven hours are passed, he is to be nourished with windy foods like figs with dried grapes, and with filberts and with the broth of very fat chickens, or eat of river eels. But if there be heat or pain felt anywhere in the intestines, then clysters are to be used made of honey-water mixed with the fat of ducks, or chicken fat, and this kind of clyster being thrown out, again inject a clyster made of hot ewes' milk and this being introduced, the kind of food spoken above is to be eaten.

If indeed after this there be biting pain either in the stomach or the intestines, balsam to the amount of one ounce, powdered and with milk is to be given as a drink, for these things free one from poisons if the remedies that have been mentioned have been promptly given.

But if a bite or a sword were poisoned, then you should place quickly upon the bite or wound, a living eviscerated chicken, and this is to be repeated: or any slave or servant should suck the place, and the mouth of the servant is to be washed out afterward with wine in which diptamin has been boiled, and after this the thiriaca is to be applied and when the thiriaca is dry, it is to be repeated until the wound no longer dries up the thiriaca.

But if the place of the bite or wound by poison should remain dry, then the thiriac is not to be applied but in place of the thiriac, lactucella (small-leaved lettuce) is to be bound upon it and to be changed often at the place until it becomes moist, and then safety will have been established, for just as much as the thiriac dries out (the poison) in so much lactucella moistens it.

It is sufficiently well known by your Reverend Holiness, that there are seven herbs, the universal nature of each soever of which is given to it by a singular and special virtue, not because of its special nature, whether that be hot or cold, or dry or humid, but rather the influence of the stars has given to each the power of freeing anything from poisons, whether in food or a drink, or a deadly poison either in a wound or a bite.

The first of these is hypericon (St. Johnswort) the other name of which is herba perforata, which Achilles, by (means of) the oracle of Apollo is said to have found in the Trojan war, as Pliny has stated. The second is vincitoxicum (Asclepias vincitoxicorum.) The third is enula. The fourth is raffanus.[12] The fifth is diptamus. The sixth is aristologia longa et rotunda (long and round birthwort) and the seventh is lactucella, and each of these is called an equivalent thiriac, so that in the case of poisoned wounds, the juice of any of the aforesaid, given in a drink, purges the wound from poison and heals it, and by means of these, in ancient times all such wounds were cured before there was knowledge of the thiriac.

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[12] Raphanus hortensis; the garden radish. There is also a wild radish called in Italian "ramolaccia" that was used as a medicine. (*Vide* Durante.)

The bite of any poisonous animal whatsoever is cured by whichsoever of these aforesaid may be applied to the place that has been bitten. Any poison that is drunk is cured by a powder made of anysoever of these, given in a drink with wine or honey-water. Avicenna further says that the dung of cocks drunk with water, at once draws out by vomiting all of the poison, and the milk of an ass prevents the sinking in of the poison, because when asses' milk is drunk with any meal or at eating, then can no poison other than napellus, do harm.

However the thiriac by its complexion (constitution) against all poisons, and by its specific action against napellus, is directly opposed and counteractive in accordance with each kind, because of the good admixture of the medicines that enter into it in the confection of the artificial thiriac, from which there results a certain divine and formal destructive power against all poisons, as I shall explain later. There should be given of it, one to three drachms three days continuing, because being resolvent and producing sweating it liberates the poison.

Terra sigillata either with the food or after eating, either drunk or eaten, has the property that if poison may have entered the stomach, it expells it by producing vomiting. But indeed after the poison has been administered, walking about should in no wise be permitted, in order that the mastery of the heart may maintain and defend its humidities, wherefore kings and princes of oriental and southern countries where these poisons are given so secretly that many die or are killed by these wicked and most pernicious acts, and where it (terra sigillata) has its origin and has become famous, up to the present time, at their meals and feasts, daily eat terra sigillata, and hence such earth is sealed with the seal of the Kingdoms, and therefore is called terra sigillata, and now it comes to pass that there is falsification of the seals, as well upon the true as upon the false earth that is brought to us. It must be known that it is rare, and experience has proved this. It is said in the book of doses (*liber divisionum*) that against the poison of napellus[13] neither an insufficiency of thiriac or anything seems to be of benefit. Wherefore we must turn entirely to another remedy, because of the short space of time that is required for the power of the napellus to reach the heart and impede it; and not bring the art of medicine into contempt with a kind of thiriac which if it does not arrest the action of the napellus, the man will die in one day or three. But of these I shall speak when describing each particular medicine for each special poison.

CAPITULUM V

CONCERNING THE SYMPTOMS AND TREATMENT OF EACH AND EVERY POISON WHATEVER, TAKEN IN A DRINK: AND FIRST, OF QUICKSILVER

Whoever shall have partaken of quicksilver shall suffer pain in his intestines and sides, heaviness of the limbs (catarrh of the head) and in the end it leads to epilepsy or to apoplexy, and then he fails of strength and dies. But if it be sublimated or extincted,[14] it makes corrosion of the intestines, and ulcers (morsurae) and sliminess of the tongue (gravedo) and of the stomach and suppuration of the heart, and the man dies.

Now the treatment is to clyster with ducks fat or butter, and then that to be repeated with water of honey, and if it be believed that it was extincted or sublimated, vomitus is to be provoked and that at once before that it may have descended to the intestines, since then it may utterly excoriate and will cause the blood to run out, and tenesmus will be induced, for then only by clysters should be the effort by which to hasten the evacuation of the quicksilver, and the treatment must be directed toward the effects (accidentia derilicta) that may follow and these are three: first, an evil, cold and humid complexion of the intestines; second, weakness of the heart and tremor, and third, wounds of the stomach or intestines. Now the first we must oppose with comfortative, stiptic and warm and desiccative things; therefore we must give myrrh and castoreum decocted in wine, and salvia and ruta, powdered; and with water in which cypress nuts may be boiled, we should give to drink. And the second we should oppose by the exhibition of the Dyamargaricon (an electuary of crushed pearl or mother-of-pearl) or dyamusci amari. And the third we must oppose by cicatrizing medicines for the wounds taken *per* clyster, if there be wounds of the intestines, but if they should be in the stomach, then in a drink; and the best of these will be trifera minor,[15] or red wine in which mirabolanum has been boiled, and if the urine should be retained on account of drinking quicksilver, then we must place him (the patient) in a bath of hot water and afterward we must apply over the bladder a sponge infused in a decoction of juniper and seeds of apium, many times, and we must give him the best pure wine in which shall have been boiled the root of cipers (a kind of rush; galingale) and we must anoint his lower belly and testicles with oleum rutatio (oil of rue) and juniper: and the bezoar of it is costus (an oriental plant like pepper[16]).

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[13] Napellus. Quite naturally when we read of Napellus in this work of Abbono's, we at once think he means aconite. This is doubtful. In the annotations to the "Alexipharmica" of Nicander (Florentiae ex Officina Mougkiana, MDCCLXIV. Fol. 254, No. 5) we shall find that while Dioscorides considered the two names to be synonymous, the scholiast of Nicander thinks this to be an error, and that the Napellus of the ancients was helleborus niger. Avicenna considered hellebore to be the most fatal of all poisons to the human species.

[14] The translator makes no apology for the word "extincted." It is good Shakesperean English. Extincted mercury was pure mercury rubbed down with lard, or other fat, or saliva, until its metallic globules were reduced to a fine powder.

CAPITULUM VI[17]

CAPITULUM VII

CONCERNING GYPSUM

He to whom shall have been given gypsum, will have difficulty in breathing and coldness in the stomach, and constipation of the belly, and white and dead looking lips; and his treatment shall be that he drink hot water with butter and be vomited, afterward he must drink again hot water and honey and be vomited, and afterward there shall be given to him two drachms of mithridatum with the best wine, and if the dryness of the belly remain he shall be clystered with the fat of a duck and oil. and his belly shall be anointed with cherva (skirret, cheri, girole), and the bezoar of it is stercus muris (mouse dung) one drachm, and some of this is to be given with wine.

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[15] Trifera minor. This remedy is mentioned in the list of preparations that are essential to be kept in any *aromataria* (apothecary's shop) as laid down by Dominus Saladinus of Tarentum in his "Compendium aromatariorum." He was teacher of physic in the school of that town.

Two described by Mesue were namely, the Trifera Sarracenica magna, and the Trifera ferrata *ex artis Senonis*. The third was the Trifera *magna cum opio*, one of the electuaries described by Nicolai.

The Trifera minor is made as follows. It is the trifera ferrata.

Recipe: Mirabolanorum chebulorum; Indorum Embelicorum; Bellicorum; Nucis Muscatae; Nasturci; Assari; Grigani Persici; Piperis; Olibani, *id est* Thuris; Ammeos; Zinciberis; Tamecit, *id est* Tamerisci; Spicae; Schinanthi; Cyperi; ana drachms IV. Scoriae ferri nutritae *diebus quinque in Aceto, et assatae,* drachms XX. The Mirabolanum is to be mixed with cows' butter, and the other ingredients with the oil of sweet almonds and all is to be aromatized with musk drachm I. It is then to be made into an electuary or confection with despumated honey and set aside for six months. The dose of the mixture is one to three drachms.

This preparation is said by Mesue in his "Canons," to be of use in "corruption and excess of menstruation, and corruption of the form and weakness of the stomach; it destroys crude humours, clears the skin and complexion, comforts the bladder and arrests fluxions of the belly, as well as being expert, efficacious and proper against humorosities and putrefaction of and in the stomach."

[16] Durante says that it stimulates urination, induces menstruation and increases venery.

[17] There is no chapter six in the original, there being a mistake in the numeration.

CAPITULUM VIII

CONCERNING THE SCORIA OF COPPER

He who will have taken scoria of copper, will go often to stool, or will vomit, and that with pain and gripes in the intestines and stomach, and his cure will be to bathe in a bath in which have been boiled the heads of goats or (lupins) *lunacae*.[18]

And he is to be given in a drink the juice of mint, and the stomach and belly are to be anointed with hot oleum resatum, and the bezoar of it is the juice of accorum (calamus) two drachms with wine.

CAPITULUM IX

AS TO THE SCORIA OF IRON (RUST, SLAG, DROSS OF IRON)

He to whom shall have been given the rust of iron or the dross of it, shall be dried up as to his joints,[19] and his belly shall adhere to his loins, and he shall suffer from marasmus, and his cure is to moisten all of his body with a bath in which turtles are boiled, and his belly is to be clystered with a decoction of the stems of wheat (*pedum edorum;* tritica spelta) or with water of mallows, and he is to eat of new butter and fatty soups; and the bezoar of it is powdered magnetic stone in pills with a like amount of the juice of mercurialis and spinach (*blitis*) in the form of pills, and the dose of the magnetic stone may be, each time, three drachms.

CAPITULUM X

CONCERNING THE MAGNETIC STONE

He to whom has been given the magnetic stone, may not be comforted, and he who receives no aid will become lunatic, melancholic or furiously mad (heroicus). Now the treatment for him is to give him fragments of emeralds and gold filings in a drink, of each one half a scruple, with wine, and he is to be clystered with the milk of ewes and oil of sweet almonds; and the bezoar of it is crushed emeralds given in a drink three times in nine days.

CAPITULUM XI

AS TO THE STONE LAPIS LAZULI

He to whom shall have been given unwashed lapis lazuli in a drink, shall suffer from a disturbed stomach and sadness and worry, and his treatment is to drink fresh drawn asses' milk every morning for seven mornings, and eat small birds roasted on a spit; and the bezoar of it is crushed crabs,[20] two scruples in a drink of wine.

CAPITULUM XII

CONCERNING SUBLIMATED ARSENIC

He who has been given sublimated arsenic will suffer excoriation of the stomach and intestines and burning and deadly pains, both thirst and a dried tongue, and will not be able to spit and finally, syncope; and his cure is that he drink butter with hot water in which rape seeds have been boiled, and be made to vomit and then he is to be given a clyster with oil of sweet almonds every day twice; and he is to eat soup of very fat chickens; and the bezoar of this is flint finely powdered, given in a drink with oil of sweet almonds, and if it may not have been the sublimate, the symptoms subsiding, he will be cured.

CAPITULUM XIII

AS TO LITHARGE

He to whom litharge may have been given in a drink will not be able to keep his food and will empty himself by vomiting, and that which he has already taken, by defecation. His treatment is to care for the colic by clysters made from the water of honey and the fat of a fowl or duck, and to give oil of sweet almonds as a drink, and to eat dried figs before the meals, and to rub the juice of apium (this may mean anise or parsley) over the stomach, and the belly with butter; and the bezoar of this is the seed of *chervi* (English: skirret, French: *chervi, gerole;* a salad plant) powdered, two drachms, in a drink.

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[18] Probably a misprint. Possibly the word should be *limacae*, snails or slugs (*limax,–acis*). (It seems incredible that the heads of lunatics, *lunacae*, could be meant, yet I find no translation for *lunacae* unless it be some of the various plants called lunaria.)

It is interesting to note that in the 1473 edition of "Petrus Abbonus" the word *limace* is used and not *lunacae*.

[19] Joints. The word in the original is *cottidie*. Vulgar latin = tunics. However it may be a Greek word from *kotula* meaning a joint. I have chosen the latter.

[20] The copy from which Boet made his translation in 1593 must have differed from mine, for Boet says, "crushed yellow amber." There are many other variants.

CAPITULUM XIV

Concerning Cerusa (White Lead)

He who has been given white lead in a drink, will suffer of vomiting white material like cerusa and will have blackened teeth, and severe pains in the belly and will defecate blood and have tenesmus, and the treatment of it is to provoke vomiting with water in which rape seed and atriplicis[21] (mountain spinach) have been boiled, and then the belly to be clystered with broth of cooked cabbages and oil without salt, and to drink mithridatum or thiriac with the best wine; and the bezoar of it is to drink the best pure wine until drunkenness is produced.

CAPITULUM XV

Concerning Calcucechumenon (the Green of Copper)

He to whom has been given calcucechumenon, that is verdi gris (*cupric acetate*) in a drink will have obstruction and suffocation of the lungs, and in breathing, will be hardly able to draw breath, and will suffer solution of continuity of the interior organs, and wounds and ulcers of the intestines and corrosive punctures. His cure will be, at once, vomiting, this having been produced by the use of warm water and butter often repeated; to begin with clysters of asses' milk and oil of sweet almonds and then to give *terra sigillata,* one ounce in a drink of white wine, and then if he be not relieved to be bathed in a tub in which there is oil of olives in such quantity as shall come up to the stomach; and the bezoar of it is (*cristallus rubeus;* ruby or red crystals[22]) red flints in powder, two drachms, given in a drink.

CAPITULUM XVI

As to Plumbum Ustum[23] (Burnt Lead)

He who shall have been given burnt lead, will not be able to speak and will be killed by suffocation, and his voice may not be heard for it will be as if of lead, and his lips and tongue will be like lead, and the treatment of this is to give two drachms of thiriaca magna every day for five days with honey water, and to put upon him the fresh skin of a wolf or a sheep and anoint his belly with the hot fat of an ass[24] or with honey, and repeat this as from the beginning; and the bezoar of this is two drachms of the cleaned and powdered grains of the citron given in a drink with the decoction of sweet wine.

CAPITULUM XVII

Concerning Azure, Minium and Zenabrio[25]

He to whom shall have been given azure, minium or zenabrio, will suffer from vomiting and dryness of the belly, and from the vomit may be seen by the color, which one of these may have been taken, and the treatment for all of these is the same, therefore there is to be given as a drink, butter in hot water in which rape seeds have been cooked, and he is to be vomited after the spontaneous vomiting, and then to be clystered with water of honey and oil; and the bezoar for this is the ashes that come from burned ivory, two drachms, the same given with wine.

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[21] Atriplicis: atriplex patula, a common garden and wild plant, a form of chenopodium.

[22] Cristallus rubeus. In medieval times the Latin *cristallus* meant flint. In old Latin it meant any crystal or even glass.

[23] In Cap. ii. it is said that *plumbum ustum* is made with sulphur and auripigmentum. Auripigmentum is arsenic sulphid. Probably a sulphuret of arsenic is meant. In Abbonus' time there was great confusion as between arsenic and lead.

[24] This passage is very obscure. It may be that there is a lapse in the printing, a word left out, probably *adeps.* In the original it is as follows: "et inungere ventrem melle vel asine calide." It is not to be supposed that his belly was to be anointed with a hot she ass, although he might be rubbed with honey. The ablative of *mel* is irregular being *melli. Asina, asinae:* (genitive) is perhaps allowable but not pure Latin.

[25] Azure: a compound of mercury, sulphur and sal ammoniac Minium: Red oxide of lead. Zenabrio: cinnabar.

CAPITULUM XVIII

AS TO REALGAR (RED SULPHURET OF ARSENIC)

He to whom realgar shall have been given will suffer thirst and purging (probably meaning both by vomiting and by the bowels) and drying up and consumption of the humidities, so that unless he be quickly treated he will either die or become permanently paralytic. I myself saw and treated a youth to whom was given powdered realgar with the fat of a roast pig, and death was held away from him, but all of his joints remained dried up and almost without motion. Now the treatment of this is to bring about vomiting with butter and hot water frequently repeated, and repeated clysters of asses' milk, and to give in the morning of each day a drink of five ounces of asses' milk, and to feed him fat soups[26] and to rub all of his body with oil of sweet almonds and quiet his thirst with juleps; and the bezoar of it is the oil of the little nuts of pine, to the amount of four ounces, given to drink at once, or the first day.

CAPITULUM XIX

CONCERNING CICUTA (HEMLOCK)

He to whom shall have been given the juice of cicuta in a drink, will lose his senses, as it induces stupor in him, and it was with this that the Athenians put away Socrates; and its treatment is to take two drachms of thiriac, modified with the decoction of diptamus (*origanum dictamus:* Dittany). And its bezoar is powdered gentian, two drachms, in a drink of wine.

CAPITULUM XX

AS TO THE JUICE OF TITYMALUS (SPURGE)

He to whom shall be given the juice of titymalus, will suffer from fluxion of the belly, vomiting and the symptoms of the colic (*cholericae passionis*). And his treatment will be with the thiriaca magna in wine in which diptamus has been boiled; and the bezoar of it is munia,[27] one drachm to be given in a drink.

CAPITULUM XXI

CONCERNING ASSES' CUCUMBER (MORMODICA ELATERIUM)

He to whom shall have been given asses' cucumber in a drink, will suffer from excoriation of the throat, and solution of the belly and pain in the intestines. And his treatment is to take two drachms of the thiriaca magna in a decoction of laurel berries and honey; and the bezoar of this is one ounce of the juice of mint.

CAPITULUM XXII

AS TO THE JUICES FROM USNEA[28] (LICHENS)

He to whom shall have been given the juice of usnea, will suffer at once with great superfluities of humidity of the mouth and throat so that he will seem to be strangling on account of which the name "strangulator of wolves" is given to it, for that wolves are strangled when they eat of it. Now its treatment is to swallow two drachms of terra sigillata at once, in a drink with hot water, and to vomit, then after that to take two drachms of the thiriac with wine and decoction of gentian; and its bezoar is aristologia longa.

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[26] Dative and ablative plural; *surbiconibus,* i.e. a Latinization of the Arabic word *zirbagi*. Bagi, a form of soup made as an elixir of meat and vinegar, sugar or honey and cummin.

[27] I think this must be a misprint, as it is most likely that mummia, powdered mummy,—or bitumen—must be meant.

There was a plant used by the Arabians, which was called in Arabic: *muriafilum;* of which Bellunensis states "Muriafilum est planta, de qua Ebenbitar et alii scribunt, quod mirabiliter resistit venenis."

[28] Usnea: Saladini, in the Canons of Mesue, describes usnea as "a very small herb that grows on the roofs of houses." Usnea was the name given particularly to the moss or mildew that grew upon the skulls of the dead. Of particular value was that from the skull of a man who had been hanged, especially if "hung in chains." It was an important ingredient in the "sympathetic ointment" with which the weapon that had produced a wound, was anointed, for the purpose of curing the wound itself. Also in the "Sympathetic powder," *Vide* "Theatrum sympatheticum auctum." Norimbergae. MDCLXII.

CAPITULUM XXIII

CONCERNING THE ROOT OF BOTHOMARIN (CYCLAMEN. PANIS PORCINUS)

He to whom has been given the root or the juice of bothomarin in a drink, will suffer strangulation and almost suffocation, for which reason it has been called *panis porcorum*,[29] and the medicine for it is two drachms of powdered laurel berries given in a drink; and its bezoar is two drachms of powdered white pepper.

CAPITULUM XXIV

AS TO THE JUICE OF CORIANDER

If the juice of coriander be given to anyone, he will suffer as with a destruction of the intellect and seem to be as though drunk, and at length will die in a stupor. Its treatment is with two drachms of thiriaca magna with the best wine. Its bezoar is the plant that is called vincitoxicum; two drachms to be given in a drink (Vincitoxicum: *Asclepias vincitoxicum*).

CAPITULUM XXV

CONCERNING THE JUICE OF MANDRAGORA

If the juice, or the fruit, or the root of mandragora be given in a drink to anyone, he will suffer from redness of the face and eyes, and he will fall into a stupor of the mind, and alienation and absence of the senses, and he will fall deeply into a sleep, and his treatment will be to swallow at once a drink of thiriaca magna tempered with the best wine, and he will avoid eating for one day, and he will drink of the best pure wine and will inhale the odor of strong vinegar; and the bezoar is the root of the radish (*rafanus*, *raphanus*) every day for three days with bread and salt.

CAPITULUM XXVI

AS TO THE JUICE OF BLACK POPPIES

He to whom has been given the juice of black poppies, will suffer from stupor and hebetude of the mind, and sleepiness like those who drink oil, and the treatment of these things is to drink two drachms of thiriaca magna, and dyacastoreum or oppopiram (?) or confection of anacardium (malacca bean); and the bezoar of this is to eat raw garlic.

CAPITULUM XXVII

CONCERNING OPIUM

He to whom opium has been given in a drink, if he be made to vomit there will appear the odor of opium in the vomitus, and he will be dull, lazy and sleepy, without feeling, and he will neither understand nor feel anything, and if he does not receive succor he will die. And his treatment will be to give him to drink the strongest wine and to rub his extremities with nitrum (native mineral alkali) and soap, and to produce sneezing with pepper introduced into his nose. And the bezoar for it is powdered castoreum, two drachms, given in a drink with wine.

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[29] See note to chapters XXII and XXIII. In the original there is what seems to be a misplacing of a portion of the text. Apparently a part of that which should apply to bothomarin is given in chapter XXII in which chapter Abbonus ascribes to Hippocrates his authority for usnea being called "strangulator luporum." The only reference to strangulation from fungi in Hippocrates is in the case of the daughter of Pausanius, who upon the appearance of that symptom after partaking of fungi, was put in a bath and vomited the fungus. (Hippocrates Opera. omnia ex J. Cornarii, Venetiis, MDCCXXXVII. De morbis popularibus. Lib. VII., Sec. 2, v. 415.) As to wolves there is but one reference made by Hippocrates. He speaks of asses' and wolf's dung as a fumigatory for the uterus. (Idem. De morbis mulierum, Lib. I. Sec. 3, v. 432.) However, bothomarin, cyclamen, panis porcinus, is said by Durante to be so called because the pigs eat greedily of it, and its root is not entirely safe, since it serves for killing foxes and wolves. (Durante. Herbario. Venetia, MDCXVI. Art. Ciclamino, folio 125.)

CAPITULUM XXVIII

CONCERNING THE JUICE OF SCAMMONY

He to whom the juice of scammony shall be given in a drink, shall suffer from failure of the heart, fainting and at once with sneezing, dysentery and fever; and his treatment is to drink often of water of hordeum, and to be put in a bath of tepid water, and then after that to drink of sirup of roses and buglosa every day and be made to sleep, and be given to smell of nenuphar (water lilies) and roses and myrtle, and to be fed with food made with sumac or berberis, and the belly is to be emplastered with the pulp of citrons (lemons or citrons); and the bezoar for this is the herb that is called ribes[30] and its juice.

CAPITULUM XXIX

CONCERNING APIUM RISUS (LAUGHING PARSLEY)[31]

If the plant apium risus shall be given to anyone, it will cause him to go out of his mind and he will laugh continuously. On account of this it is called laughing parsley, and the treatment is to procure sleep by giving the best of wine until drunkenness sets in. And the bezoar of it is succus melissae (Melissa hortensis. Balm citronella) given with vinegar in a drink.

CAPITULUM XXX

CONCERNING THE JUICE OF CHERVI[32]

He to whom the juice of chervi shall have been given, will suffer from vomiting and pain in his belly, and his treatment is to give him two drachms of the thiriaca magna in a drink of the best wine and its bezoar is ipericon (St. Johnswort).

CAPITULUM XXXI

CONCERNING THE JUICE OF NAPELLUS

He to whom shall have been given either the juice or the fruit or the substance of napellus, will in the space of one to three days die, and in the meantime he will suffer from syncope and failure of the heart, and blackening and gradual mortification of all the members; then all the parts of his body will be swollen and he will not be able to contain his tongue in his mouth. Therefore let him be succored at once, giving him terra sigillata tempered with water and butter, and let him vomit, and then must be exhibited two drachms of the best emerald crushed into a powder with wine; then let there be laid over his heart silk moistened in infusion of grains[33] in the juice of buglosa and roseated water; and this to be repeated, and then servants should suck the extremities of his body with their mouths; but he will die except he be given the emerald.

Now the bezoar of this is the mouse, because it nourishes itself upon the root of napellus. Give it dried, two drachms, in a drink.

CAPITULUM XXXII

AS TO THE JUICE OF OLEANDER

He to whom may have been given in a drink, the juice, the spines or the bark of the oleander will suffer from syncope and palpitation of the heart and great fear, and the treatment for this is to take of diacastoreum, two drachms, given in a drink; and the bezoar of it is the grains of juniper, in quantity, two drachms, with wine.

CAPITULUM XXXIII

CONCERNING THE JUICE OF MEZEREON (DAPHNE MEZEREUM)

He to whom has been given in a drink the juice of mezereon, will suffer at once with fluxion of the bowels, and fear, and excoriation of the intestines, and his treatment will be with syrupus roseatus and barley water, and he should be made to smell of cold and odoriferous fruits; and the bezoar is to drink of origanum assatum.[34]

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[30] Ribes. A word of Arabic origin. It is translated as the "acedula." Medieval Latin for ebulus (Borelli), or oxalis, as thought by Carpenterius.

[31] The translation will make the application sufficiently clear.

[32] Chervi. Sium siserum. French; chervi, gerole.

[33] The word in the text is *grana* meaning grains. This seems too general a translation, but it is difficult to know what grains Abbonus meant. Pliny uses the term, meaning pepper-corns; and again poppy-seed. It would seem reasonable to suppose that some rubefacient application was to be applied.

CAPITULUM XXXIV

CONCERNING THE JUICE OF HELLEBORE

Anyone to whom the juice of hellebore, or the root of it may have been given, will suffer with strangulation in the throat, and *præfationem*,[35] and perhaps may be suffocated suddenly, and hence it is called the "strangler of the flesh" (*strangulator carnis*), and the treatment for it is to take in a drink, at once, honey water, and to place the man in a quiet spot apart, and then to give the bezoar of it, which is two drachms of the dried and powdered flowers of the white water-lily.

CAPITULUM XXXV

AS TO ALFESIRA (ARABIC: ALFESERI. NASTURTIUM BASILICONICUM)

Alfesira being given to anyone, he will suffer with excoriation of the belly and with vomiting, and his treatment will be to give him in a drink, honey-water and then to provide and give citonium,[36] cooked in its own juice; and the bezoar for it is anagallus.

CAPITULUM XXXVI

CONCERNING THE JUICE OF BRIONY

If Briony juice be given to anyone, he will suffer from dimness of vision (*scotbomiam*) and stupidity and great anxiety of the spirit; and his treatment will be by two drachms of thiriac with wine of the decoction of enula; and the bezoar of it is pepper.

CAPITULUM XXXVII

AS TO THE SPINES OF SPICA (SPIKENARD)

If the spines of spikenard be given to anyone, he will suffer twisting of the venter and nausea, and his treatment is with two drachms of thiriac, with a decoction of wine with diptamus boiled in it.

CAPITULUM XXXVIII

CONCERNING THE SPINES OF OLEANDER

He to whom the spines of oleander have been given, or he who shall eat of meat cooked upon a spit made out of the wood of oleander, or he who may sleep under the shade of oleander, or he who may drink of water from a river upon the banks of which oleander grows, and there be many such in the Island of Sardinia, for I am expert in this matter and have seen it: will suffer with tearing in the belly and will be out of his mind and beside himself (*extenuationem*); and if he be given a bath heated with oleander wood, being bathed he will suffer fainting in the bath. His cure and the bezoar have been stated in the chapter on the juice of oleander.

CAPITULUM XXXIX

CONCERNING THE SPINES OF BEDEGUAR (SPINA BLANCA, WHITE THORN)

He to whom may have been given the spines of bedeguar, will suffer from difficulty of swallowing, and his treatment will be to lick up oil of sweet almonds; and the bezoar for it is the morus of Celsus.[37]

CAPITULUM XL

CONCERNING ANACARDIS (CASHEW)

He who may have eaten of cashew nuts will suffer with violent burning in the throat whensoever he shall inhale, and his face shall be sharp, and he shall have malaise and alienation of the mind; and his treatment must be with unctuous remedies, as oil of almonds and of sesame, and butter and milk and fat soup of chickens: and if he have pain in his intestines, then a bath is proper to be used, and if they induce fever, then it is proper that the diet be made small and of cold and of moist things, and if the mind be alienated, then sleep must be induced by the use of the seeds of lettuce and of white poppy; and the bezoar is the seeds of pine toasted and eaten.

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[34] Assatum, i.e. prepared by cooking it in its own juice.

[35] Praefationem. This word I find impossible to put into a reasonable English rendering. It is derived from the old Latin defective verb *praefor* which has the meaning: to premise, preface, to say something beforehand. In medieval Latin of the period of Abbonus (1250–1316) the noun *prefactio*, founded upon the verb, had the meaning: a prelude, an exordium, also a reward or premium, and sometimes, a foreboding. It would seem that in some way the last signification might apply in the present instance. Praefationem should be probably praefocationem, which means strangling. My copy has "strangulator carnis"; Boet makes it "strangulator canis."

[36] Chickweed.

[37] Morus of Celsus. This is probably the black mulberry, which is mentioned in De simplicium medicamentorum facultatibus of Galen, sectio cum titulo, "Morea murus." This is called in Italian, *moro celso*.

CAPITULUM XLI

Concerning Nuts and Hazel-nuts or Filberts (Avelana, Abellana)

He who eats rancid nuts or filberts, will suffer bad symptoms; that is to say, nausea, loss of appetite, vomiting and weakening of the animal spirits, and his treatment will be with the juice of citronella and apples. And if it happen that he has eructations of the odor of putrefied flax, then he may die; and his treatment will be with diaciminum (a preparation of, or containing cumin) or diaperion (probably diahypericum. Hypericum, St. Johnswort) these to be taken with pure wine, and the stomach to be fomented with the oil of nard.

CAPITULUM XLII

As to Bad Castoreum

He who shall have taken bad castoreum in a drink will suffer with pain and delirium and struggling, and his tongue will protrude from his mouth, and he will have fever. His treatment will be to be vomited with butter and water of honey until his vomitus shall have lost the odor of castoreum; afterward he is to be given the juice of mulberries or of limes; and the bezoar of this is the seeds of coriander roasted and powdered, two drachms.

CAPITULUM XLIII

Concerning Bad Mushrooms

He who has eaten of bad fungi (mushrooms) especially those that are grown over iron or upon mounds, or on bad earth, or near warm springs, will be tortured with the greatest pains, and will suffer pain in the pubes, and be unable to urinate; and he will have pain in the belly, and if he will have smelled of a bad mushroom he will suffer with epilepsy and perhaps he will die; and at once there should be brought to him to drink the best wine in which black pepper has been boiled; and then he is to be clystered with water of honey and salt, and his pelvis (*Femur* had the meaning of "pelvis" in Abbono's time) is to be fomented with oil of nard. The bezoar for this when the fungi have been cooked and are eaten, is pears cut in small pieces and at once stewed; and the bezoar after they have been eaten (raw?) is *alleum* (onions or garlics) taken raw.

CAPITULUM XXXXIV

Concerning Nux Vomica

He who drinks of nux vomica or whosoever shall eat thereof, shall suffer with the most violent vomiting and dissolution of his senses, and the treatment is to drink the juice of citronella and myrtle, and to drink old wine; and its bezoar is the rind of lemons.

CAPITULUM XLV

Concerning Coloquintida (Colocynth)

He who has eaten, of his own act, the colocynth growing on its tree, will have consumed a lethal poison, and if he be not immediately succored he will suddenly die on the third day; and its treatment and at the same time its bezoar is two drachms of the best emerald, powdered and given in a drink.

CAPITULUM XLVI

As to the Fig of Pharaoh[38]

He who has eaten of Pharaoh's fig will at once suffer from fever and pains throughout all his body, and he will appear to be hydropic. Now this I have seen in Sardinia in the judicial district of Galuria, (Cagliari) where there is abundance of these figs of which if any eat one he will have one day of fever, if he eat two, he will have two days of fever and if three, a three days' fever, and many of these fevers will be tertian fevers, and his treatment is with the prepared water of hordeum, or the serum of goats' milk, and the bezoar of it is the seeds or grains of *cucumeris* (cucumber) cleansed and powdered and two drachms given in a drink.

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[38] The sycamore fig, sometimes called Pharaoh's fig, grows wild in Egypt. The tree is called the Egyptian Sycamore and the fruit is edible and harmless, but of coarse grain and flavor.

CAPITULUM XLVII

CONCERNING THE SEEDS OF JUSQUIAMI (HYOSCYAMUS)

He to whom shall be given the seeds of jusquiamus in a drink shall suffer with drunkenness, alienation of the mind and stupor and immobility of all the members; and his treatment is with piper longum (*pimpilim*) powdered and given in a drink, and the bezoar is the grains of fisticum[39] eaten or drunk.

CAPITULUM XLVIII

AS TO THE GRAINS OF COCHOGRIDII[40]

He who has taken the seeds of cochogridii in a drink will suffer vomiting and fluxion of the belly and tribulation in his stomach, and its treatment is with two drachms of thiriaca magna with wine; and the bezoar is bitter almonds.

CAPITULUM XLIX

CONCERNING RANCID LAUREL BERRIES

He that eats rancid laurel berries will suffer those symptoms that are suffered by him who has eaten rancid nuts, and its cure and bezoar are the same.

CAPITULUM L

CONCERNING CATAPUTIA (CASTOR-OIL PLANT)

He who has eaten castor beans will suffer the same symptoms as he who has drunk girafole[41] which is spoken of above and which is called cherva, and the treatment and bezoar are the same.

CAPITULUM LI

CONCERNING THE SEEDS OF URTICA

He who eats of the seeds of urtica will suffer from excoriation of the throat, mouth and tongue, and burning and difficulty in micturition, and his treatment will be to drink freely of oil of sweet almonds; and the bezoar of this is the seeds of citronella, powdered and drunk with hot water.

CAPITULUM LII

CONCERNING THE SEED OF BLACK POPPIES

Whosoever shall drink or eat of the seeds of black poppies, shall show the same symptoms as he who has taken opium, only less severely, and the treatment and the bezoar are the same.

CAPITULUM LIII

AS TO THE SEED OF HELLEBORE

He who shall eat or drink of the seeds of hellebore, shall have the same symptoms as he that has drunk the juice or eaten the root of hellebore, and the treatment and the bezoar are the same.

CAPITULUM LIV

AS TO THE SEEDS OF CICUTA

Anyone who drinks of the seeds of cicuta will suffer from the same symptoms as those described of him who has drunk of the juice of it, but the symptoms may be less severe. The treatment and the bezoar are the same.

CAPITULUM LV

CONCERNING WET CORIANDER SEED

He who eats or drinks of the wet seeds of coriander will suffer the same symptoms as he that has drunk the juice of it, and the treatment and the bezoar are the same.

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[39] Fisticum. Dioscorides gives "Festuca" as being the same thing as Aegilops. Aegilops is a kind of oak with edible acorns described by Pliny, 16. 6. 8., and also a kind of tare growing among barley (avena sterilis) Pliny, 25. 13. 93., or a kind of bulbous plant. Pliny, 9. 5. 30. In this instance I am inclined to think Abbonus meant the weed among the barley.

[40] Cochogridii. The word is spelled in the book of Abbonus, "cochognidii," this is evidently an error of the printer. The only reference to the drug is to be found in the Sinonimum at the end of the Antidotarium of Nicolai with the commentaries of Joannes de Sancto Amando. In that list we find the following: "Cocogridium, id est seminae laureolae." Hence the seed of laurel is the subject of this chapter, but see below.

[41] Girafole, cherva, *i.e.* sium sisarum, skerret, gerole.

CAPITULUM LVI

CONCERNING THE SEEDS OF SERPENTARIA

He who shall eat of the seeds of serpentaria will suffer from stridor and prickings in the throat and teeth, and heat and great loss of strength (*superextuationem*), and the treatment is with new butter to be drunk; and the bezoar is a porridge of the flour of barley cooked in water.

CAPITULUM LVII

CONCERNING THE BITES OR PUNCTURES OF ANY POISONOUS ANIMAL WHATEVER

Anyone indeed who may have been bitten or punctured by any poisonous animal whatsoever, and knows not what may be (the nature of) the puncture or bite, shall at once bind the place about and place upon it cups with scarification, and shall let the place be sucked by the mouth of servants, and then he shall place upon the part powdered crabs, and if the part tends to become corrupted, the member shall be cut off if it be a suitable part, or a member suitable for amputation; and if it be not, then shall it be cauterized; for when the part begins to turn black or to putrefy, it will be a sign that the puncture was by a pernicious animal. But however, if it does not tend toward corruption and putrefaction, however severe may be the pains, if it nevertheless does not extend rapidly in the body, it is not bad unless the puncture is near the heart or near some large artery.

CAPITULUM LVIII

CONCERNING THE BITE OF A VIPER

He who is bitten by a viper must take medicines, and the bezoar of this is thiriaca magna, and perhaps mithridatum will help, and also medicines of asafœtida, and old butter, and he must eat garlics and drink pure wines.

CAPITULUM LIX

AS TO THE BITE OF THE SCORPION

The pain of the bite of the scorpion is helped by vaporization (of the part) with oil and garlics, and thiriaca (with) Dyatessaron (a compound of seselis or meadow saxifrage with hartwort as its principal ingredient) and the place is to be anointed with old oil. The bezoar is the body of the scorpion crushed and laid to the place.

CAPITULUM LX

AS TO THE BITE OF SPIDERS

The bites of spiders are comforted by the application of the juice of apples or of pears, and the pain is helped by laying on a cold piece of iron and this repeated, and the bezoar is endive.

CAPITULUM LXI

CONCERNING THE BITE OF RUTELAE[42]

The bite of the rutela is comforted very much by a soothing bath (*balneum lalium*) and to bury the part in hot sand or cinders, and to drink the powder of fennel flowers (nigella, melanthium).

CAPITULUM LXII

AS TO THE STING OF BEES

Now the punctures and pain of the sting of bees is eased by the flowers of thyme with armenian bole and vinegar and camphor, and he who washes his hands and face with the juice of malva will not be stung by bees.

CAPITULUM LXIII

CONCERNING THE STINGING OR BITING OF ANIMALS

If one be bitten or stung by an animal and the sting or teeth be left behind in the place bitten, then it is needed that that place be rubbed gently with oil and ashes. Afterward a plaster is to be placed upon the part, made of oil and leaven (yeast?) and thus the poisonous stings or teeth are drawn out.

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[42] A kind of reddish beetle. The small beetle that is called in England, "ear-wig," in France: *percoreille*.

CAPITULUM LXIV

Concerning Dog Bites

If indeed anyone be bitten by a dog, and doubts as to whether or not that dog be *rabiosus*, he may rub a morsel of bread upon the place of the wound and then give it to other dogs, when if they refuse it the dog is *rabiosus*, but however, the contrary if they shall eat of it. Now the signs beside this that the dog is *rabiosus*, are that the dog hangs his tongue out of his mouth and draws his tail between his hind legs, and has a raucus voice and shrinks away from sound dogs and men, and he will bite the master of his own house or everyone who approaches him, and other dogs will run away from him. Now he who has been bitten, unless he has taken precautions and has been treated as before stated,[43] when the dog-days shall come, he will become *ydrofiorbicus*, that is to say: fearing water, which is because, on account of the rabies a great dryness and appetite for water is developed, and then it will seem that the man imagines that there is a dog in the water, and he, dying of thirst, runs away from the water for fear of the monstrous dog; and then there is no longer hope of cure, and the disease progresses and the rabid one both pours out froth[44] with his contamination as does a puppy, and whensoever there may be lacking phlegm, like a puppy; that is because he has it continually in his imagination that he has the figure of a dog impressed by the dog, upon his humidities (*sigillat in bumiditatibus suis*).

And you must know that if a horse, or a mule, or an ass, or an ape, or a man, suffer from rabies, it will be about the time of the greatest heat or cold. Now the treatment of it is, that upon the place bitten shall be applied cups with scarification, and garlics or cepes shall be applied, crushed and confected with butter from a cow, and he shall take in a drink the electuary of river crabs, and be placed in a bath every day. His mental state and melancholy (*etbicorum et melancolicorum in cura laboret*) must be cared for, and he shall be bathed in water of the sea before forty days; and the bezoar is river crabs parched and purified, and three drachms of this to be given in a drink, every three days.

CAPITULUM LXV

As to Cantharides

If anyone shall drink of cantharides, he shall suffer from frequent micturition and purging, and with pernicious symptoms, and his cure is that he shall take the milk of ewes with oil of almonds, thus the ulcers of the bladder will be cured; and the bezoar of it is ten seeds of alchechengi.[45]

CAPITULUM LXVI

As to Milk

If anyone shall have drunk milk and it shall coagulate in the stomach, he will suffer with softening of the stomach, and nausea and he will sweat a cold sweat, and his treatment will be to drink the strongest vinegar and afterward to take of asafœtida one drachm or of sirupus acetosus, one ounce, alternating.

CAPITULUM LXVII

As to Meat Roasted in Dough (Assatura Suffocata)

If anyone shall eat of roasted meat which is covered with dough, when it is first withdrawn from the oven, he will suffer dizziness like unto epilepsy; and his cure is to be vomited, and after, he is to take of the juice of stiptic fruits, and saccharum rosatum with eleven (grains?) of aloes and mastic; and he is to strive to sleep, and is to be placed in a bath.

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[43] *Vide capitulum LVII.*

[44] In the text the word is "sperma," probably a misprint for "spuma."

[45] Alchechengi. This must be a misprint and it probably should be "alchenchergi." This is of course an Arabic word, and in Bellunensis, we find the word "alchenchergi" with a cross reference to the word "condysi." Under condysi we find the following: "Condysi:" which is called by the Arabs, "condes:" is a root found in Syria, and is as large as the thumb, having a sharp flavor and odor, neither is it like hellebore, nor is it a species of hellebore as the Latins say; and as Ebenbitar has said in his book "De simplicibus," and yet neither Galen nor Dioscorides have spoken of it. "Isach-Eben-Ham-ram has said that condysi is the root of a plant whose interior part is similar to that of the citron, and the outer part of the cortex is black, and the plant of it is similar to the alchencher, which is alharsef, which is a species of cardi (*cardus benedictus*) which in Sicily is called cacozole."

CAPITULUM LXVIII

As to Cold (Stale) Fish

If perchance anyone may eat of cold fish, after one or two days have passed since it was caught, or if anyone partakes of flesh the day after or before the third or fourth day after it was slaughtered, or if it (the animal) died of disease, or was struck dead by lightning, it will occur that there will come out of this food evil fungi, and the treatment of them is that he shall be vomited, and shall take as a drink pure wine with pepper, and is to be treated as for fungi, except that he may not eat pears.

CAPITULUM LXIX

As to the Cat's Brains

He who may have been given cat's brains in a drink will suffer from stolidity, and will appear to be childish; and his treatment will be to be given *terra sigillata* and be vomited by it, and this twice each month, and he shall take the confection of dyamoschus every day early in the morning; and the bezoar for it is powdered musk, five scruples, given in a drink with white wine.

CAPITULUM LXX

Concerning the Tip of a Deer's Tail[46]

He who has been given the tip of a deer's tail, will suffer with the symptoms of aconite (*napellus*) and his treatment is with a portion of crushed emeralds, five scruples given with wine, and then all of the body is to be rubbed with oil made from the seeds of lemons, and the bezoar is two drachms of the thiriaca magna.

CAPITULUM LXXI

Concerning Bovine Blood

He who has taken the blood of an old bull or ox, will suffer death, and he will vomit coagulated vomitus, and his treatment is with the most sour vinegar, hot; and then to vomit; afterward to take thiriaca and then to be put in a hot bath.

CAPITULUM LXXII

Concerning Toad's Blood

Anyone to whom toad's blood may have been given, will suffer with difficulty of breathing, and with symptoms about the heart, and if anyone partake of the spittle (of the toad) he will quickly die, just as if he had drunk napellus, and the treatment of this is with a portion of emerald, one scruple, and then to enter into the body of a large four-legged animal, that is to say, a bull, ass, mule or horse, and this to be repeated, and then to drink two drachms of thiriaca.

Now the bezoar of this is the stone found within the head of the toad, which among the lapidaries is called *borras*, commonly, *trepanide.*

CAPITULUM LXXIII

Concerning the Blood of a Red-haired Angry Man[47]

If the blood of a red-haired angry man, extracted at the time of his rage or mania be given to anyone to drink, he will suffer with furor of the mind, and delirium and shamelessness, and then slowly he will dry away. And his treatment is to drink the water of Palestine cucumbers, and to chew the seeds of the same, and to swallow the juice and to drink the syrup of white water-lilies; and the bezoar of it is a troche of tirus.[48]

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[46] The idea that the tip of a deer's tail is poisonous is probably derived from the statement of Pliny (*Lib.* XI) that the deer has bile in his intestines and tail.

[47] The title to this chapter may be read in a number of plausible ways. There is a difference in the Latin of the title of the chapter and that in the body of it. It may be read as "the red blood of an angry man," or as above. The problem has been referred to a number of Latinists, and the variation of opinion is quite remarkable. *Sed, quid moror?*

CAPITULUM LXXIV[49]

Concerning Menstrual Blood or that of a Leper

He who shall drink the menstrual blood or that of a leper will seem to be distracted and lunatic,[50] evil-minded and forgetful, and his cure is to drink of crushed pearls (*margaritas*[51]) one drachm with water of honey, and to be bathed in tepid water, and to associate (copulate, *coire*) with a girl according to the law, and to be surrounded and amused by boys and girls; and the bezoar of it is to eat serpents whose heads and tails he tears off with his hand.

CAPITULUM LXXV

Concerning the Bites of Fasting Men

He who may have been bitten by a fasting man, should apply over the wound, the dung of cocks, otherwise it will become a poisonous ulcer and difficult to be cured.

CAPITULUM LXXVI

The Bite of Any Serpent

He who has been bitten by any serpent, should at once bind the place about with a strap, and then lay thiriac upon the wound, and drink of the same, and over the heart he should place emeralds and pearls and coral, and the place of the bite should be sucked out by a servant.

CAPITULUM LXXVII

Concerning the Bile of a Leopard

He who has been given the bile of a leopard in a drink, to him shall occur the symptoms like unto those of aconite, or that of vipers, and the bezoar and the cure are the same.

CAPITULUM LXXVIII

Concerning the Salamander

He who may drink a salamander shall suffer with the same symptoms as of cantharides, and the cure of it and the bezoar are the same.

CAPITULUM LXXIX

Concerning the Marine Hare[52]

He who has taken a *lepus marinus* (marine hare) or a frog fish (*rana maria*) in his drink, shall have fatty vomit and all his body shall become swollen and blown up as with hyposarca, and he shall stink as to his breath, and his cure shall be by being made to vomit at once with butter and water of honey, and then to take after that thiriaca dyatessaron[53] for three days, and shall be fed with the flesh of sparrows and is to drink of the best wine, and the bezoar is the flesh of wolves, baked and eaten.

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[48] Tirus. This may be either a word derived from the Greek signifying, the frankincense tree; or from *tus, turis,* meaning a plant called also chamæpitys; in Latin, *aiuga,* the ground pine. Or perhaps it may be the "thya" or "thyia," the citrus tree. It is more probable, however, that Abbonus meant the troche of vipers (sometimes called *tyri,* or *tiri*) which was known as "Trochiscus viperarum Andromachi, ex Galeno." This delectable medicine was made by separating the flesh of vipers from the bones, cooking it with the seeds of green anise and mixing it with sufficient dried bread crumbs to make it into pills or troches. The formula may be found in "The Canons of Mesue," and in Galen's "Ad pisonem" (Cap. 9). A full treatise on the matter is to be found in the "Tyrocino pharmacopeo" of Pierola, Pamplona. 1721. fol. 132.

[49] Text of chapter LXXIV: Menstruum sanguinem aut leprosi qui biberit ille vidibitur esse pistrigiatus* et lunaticus maleficiatus et obliviosus et ejus cura est potare margaritas tritas dragmas I. cum aqua melisse et balneari in aqua tepida, et coire cum puella secundum legem et conversari et amplexari cum puellis et juvenculis et ejus bezoar est comedere serpentes quibus caude et capita per palmum fiat abcissa.

* The word "Pistrigiatus" is used but twice in the original (see page 30) by Abbono. Its proper rendering has caused much investigation by me and a number of Latinists, without much result or satisfaction to anyone.

Boet translates the word but once and makes the old French word "moeuse" its equivalent. The modern form of moeuse is "mousse" which means blunt, dull of wit.

Cardanus in his book on poisons (De venenis: *Lib.* III. Patavii MDCLIII, p. 63) uses the word "Praestigiatus" which has the meaning "delusioned, deceived." A cognate meaning to this is probably what Abbonus meant to convey.

[50] This chapter is for the translator, the most obscure in the whole book. That the wise critic who shall arise to deride the work of the present renderer of Abbonus, may make his own translation, the text, with the abbreviations clarified, is annexed. The attention of the critic is respectfully called to the words "pistrigiatus," "coire," "conversari" and "amplexari" with their relations to other words.

[51] Margaritas. Crushed pearls by the drachm as a medicine seems rather an impossible sort of medicine until it be known that often "margaritas" also meant "mother-of-pearl."

[52] A poisonous sea fish. Aplysia depilans, or the frog fish. Lophius piscatorius, the fishing frog.

CAPITULUM LXXX

THE BITES OF MICE, MONKEYS AND CATS

He who shall have been bitten by a mouse, a monkey or a cat, shall place upon the bite, cock's dung, and he may be cured by the method described in the case of bites by fasting men.

CAPITULUM LXXXI

CONCERNING WHAT IS WRITTEN ABOUT THE BEZOARTIC VIRTUE AGAINST EACH POISON: AND AS TO TWO DIFFICULT QUESTIONS

According to opinion a bezoar ought to be a certain stone, the proper and specific quality of which toward lethal poison, is that of delivering one from death, without any other kind of medicine; and here it refers to all medicines which are powerful to deliver man from death from any disease or poison, and which are called the bezoar of that disease, whether that medicine be of stone, or seed, or a juice (extract) or any composite medicine. Now he who has that stone is safe from any mortal poison. It is then to be powdered and given in a drink to the amount of one drachm.

By means of it the King of England, Master Odoardus, is said to have been cured, when on a Crusade, he was wounded with a poisoned sword, in the city of Acon, by a soldier of the Soldan. Moreover I have seen the stone, for it was given to the preceptor of the Temple. It is reddish, *purulentus*,[54] light like a sponge and frangible like gypsum. Every poison, as well animal, vegetable or mineral has a proper medicine opposed to it, which by its specific virtue of opposition, is able to bring about liberation from death from that special poison. Hence a bezoar for each poison is that medicine which without any elemental virtue of its own, cures that poison. And as concerning whatsoever bezoar already I have brought forward in the treatment of each of the poisons whatsoever at the end of each description, it is not necessary further that they be recapitulated.

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[53] Dyatessaron. An electuary made from four medicines, gentian, aristolochia rotunda and bayberries, each two ounces, honey two pounds. The whole to be incorporated with the extract of juniper.

[54] Purulentus. The translator is quite unable to understand the meaning of "pus-producing" on this connection. The Greek word *pyos* may also mean the first milk, whether of women or animals, after giving birth, and it may be that here the word may carry the meaning of "milky."

NOTE I. Definition of "Bezoar" from Andreas Bellunensis' "Arabicorum nominum." "The true Bezahar is a stone which is called "deer's tears, which is generated in the deer, because deer eat greatly of vipers in Persia; and such a stone is also found in mines, as appears in the book of the Arabian Tiphasi, 'De lapidibus pretiosis,' translated from the Arabic into Latin; yet now (the word) is accepted to mean anything that resists poison."

NOTE II. As to the story of the cure of King Edward of England, at that time the heir apparent to the throne. The event related must have occurred sometime between May, 1271 and August, 1272, probably at Acre, in Palestine.

Thus it was during the lifetime of Abbonus. We may read in Baxter's "Chronicles of the kings of England" (London. Folio. 1647) quite a different account of this incident.

Folio 94. "For at his first coming thither he rescued the great city of Acon from being surrendered to the Soldan; after which out of envy of his valour, one Anzazim, a desparate Saracin who had often been employed to him from their General, being one time upon some pretense of a secret message, admitted alone into the chamber, with a poisoned knife gave him three wounds in the body, two in the arm, and one near the arm-pit, which were thought to be mortal, and had perhaps been mortal, if out of unspeakable love the Lady Eleanor his wife had not sucked out the poison of his wounds with her mouth; and thereby effecting a cure, which had otherwise been incurable."

CAPITULUM LXXXII

Concerning the Question Whether the Thiriac, etc.

It is indeed a question whether the thiriaca magna may be a bezoar either liberating from poison by its specific form, or by liberating from poison by its material elements: by its complexion not by its form. There are certain who have sought to contend that all that concerns the bezoar is founded upon reason. Galen, who with Andromachus, the philosopher who first invented and proved it; might have considered it to be of no benefit in cold diseases, except it were on account of the opposition of the many hot things in it, and in hot diseases on account of the many cold medicines which enter into it; and thus says Galen "this thiriac of Andromachus is medium in complexion, but when to it is joined the flesh of tyrus (*viper*) and *terra sigillata*, it becomes by its form (material) of value against all poisons, it may be toward certain more; toward others less, and for some given alone, for others given with additions."

Others indeed, have said that it acts by its elemental complexion (composition) wheresoever it operates in the human body, basing (their opinion) upon the weakness of its operation or its nullity of usefulness when it is given against napellus, or against vipers or against leopard's bile, and in brief, against whatsoever lethal poison according to its specific form (structure) when it seems either not sufficiently or not at all, to bring relief, as Rhases has said.[55]

The solution of this doubtful question is that in the treatment of any poisoning, four methods may be considered, according to which, the force of the poison is either destroyed or its substance is resolved and is expelled, or by specific operation it is corrupted, and the power of it is entirely carried away.

Example of the first: opium, which destroys euphorbium, and castoreum which destroys opium. Example second: terra sigillata and alleum which destroy the substance of the poison either by vomiting or sweating. Example third: emerald which may flee from poison and draw it even to the extremities of the members. Example fourth: the specific form (structure) opposed to poisons which exist in it, as in the bezoartic stone whether it be natural or artificial; and in the divine and noble composition of the thiriac, and the permixture resulting from each and all of the medicines confected together; and because in the thiriac is the constitutional power of all of the many medicines capable of destroying poisons in accord with their qualities of opposition, and of resolving poisons and expelling them. Hence it is well said that the thiriac is a medicine of a composition like poisons and because of this composition there results a divine thing that on account of its artificial form, rather from without than from within, it is opposed to all poisons and thence it is well said that it is the bezoar against all poisons, conforming to them more or less; and it may be that certain (things) are more antidotal to certain poisons than it, but in truth it is antidotal (bezoar) to all, and hence it has been called by physicians the "mother of all medicines."

Colophonium

To this work upon poisons, by Petrus De Abbono, Thou, our Most Blessed Father, hast inscribed Thy name.

What though it may be brief, nevertheless it may by its usefulness in preserving thy health and caring for thy life, greatly compensate for its brevity.

Note iii: In the original copy in my possession, Abbonus makes no effort to answer the second "difficult question."

Attached to the translation of Boet (1593), a copy of which is to be found in The Library of the Surgeon General at Washington, there is a dissertation upon this question by Petrus Cararius, which is very interesting, and in which he comes to the conclusion that a poison may be given at a certain time and not produce death until a later fixed date (see introductory chapter: *ad finem*).

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[55] *Vide* Cap. iv. *circa finem.*

It has been corrected by Wilhelm Haldenhoff and he has cared for it before its printing which (has been done) by Jacobus Thanner of Wurtzburg, in the city of Leipsig, the XIIIth day of July, Anno Domini MCCCCLXXXXVIII.

NOTE IV: This work of Abbonus' is dedicated probably to Bertrand de Got, Archbishop of Bordeaux, who became Pope under the name of Clement V, November 14, 1305. It was during his papacy that the Order of The Knights Templar was abolished. He died April 20, 1314, two years before the death of Abbonus. It may safely be conjectured that the Pope Boniface mentioned in *Capitulum* IV is Benedict Gaetan, who was made Pope in 1294, and who took the name Boniface VIII. He was the author of the famous Bull "De sepulturis," which by possible misunderstanding had much to do with the difficulty of acquiring a knowledge of anatomy by means of dissection. Boniface VIII died October 11, 1303.

A DESCRIPTIVE OUTLINE OF THE HISTORY OF MEDICINE FROM ITS EARLIEST DAYS TO 600 B.C.*

By JAMES F. BALLARD

BOSTON, MASS.

IN 1891 Dr. James Finlayson of Glasgow gave the first of his so-called bibliographical demonstrations. He believed that a better understanding of the history of medicine could be had if the student could be brought into direct contact with the original texts and sources of information. He selected for his first demonstration a number of anatomical works containing many curious illustrations. Then in succession he gave an evening each to a discussion of physiognomic diagnosis, Hippocrates, Galen, Celsus, ancient Egyptian medicine, and the Alexandrian School.[1] Dr. Finlayson's method was to show the actual texts, read extracts from them, commenting on the importance of the period or individual under discussion, and finally to show the sources of information.

Dr. F. H. Garrison[2] calls attention to the exhibits of Dr. J. S. Billings[3] and of Dr. George Dock.[4] Dr. Billings exhibited forty-four rare medical books dating from 1470 to 1848, arranged in chronological order but without particular reference to their historical importance. Dr. Dock exhibited thirty-seven works selected from his own library, mostly of the modern period, and relating chiefly to clinical medicine. These two exhibits were not of the same type as Finlayson's demonstrations, which were primarily historical lectures illustrated by texts and supplemented by sources of information for further study.

Two exhibits[5] arranged by Dr. E. C. Streeter, one on Vesalius shown at the American Medical Association meeting at Atlantic City in 1914 and the other on infections shown at the American Medical Association meeting at Boston in 1921, deserved and received the highest commendation. The last was a model of its kind.

Pagel[6] divides the history of medicine into three main groups: Ancient, to 130 A.D.; middle period, 130 to 1500 A.D.; modern period, 1500 A.D. to date. Ancient he subdivides into: Prehistoric, the medicine of primitive peoples from the beginning of the world to 4500 B.C.; medicine of the older civilizations, 4500 B.C. to 600 B.C.; classical period, Greek and Roman, 900 B.C. to 130 A.D.

I shall confine myself in this paper to the first two subdivisions, first taking up primitive medicine.

PREHISTORIC PERIOD[7]

According to Neuburger:

> If . . . purposeful, instinctive actions which serve to mitigate pain or irritation may be considered as medical in the widest sense of

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* Read before the Boston Medical History Club, Jan. 15, 1923, in connection with an exhibition of texts, source books, pictures and other material illustrating the subject.

the term, being as they are outward manifestations of the healing power of nature, then may medicine be considered not only to extend back to the childhood of the human race, but to exist as animal medicine.

Heated animals refresh themselves in cold water, warm their stiffened limbs in the sun, and destroy irritating parasites. Cats and dogs lick their wounds, dogs eat grass to promote vomiting. Monkeys seek to check the flow of blood by application of the paw, and are adept in the extraction of foreign bodies, such as thorns. The medicine of animals, moreover, is not confined to self-help, but extends at times to help of others, particularly when dealing with the young. Similar primitive actions may be considered to have formed also the foundation of human medicine.

The first lessons came to primitive man by injuries, accidents, bites of beasts and serpents. The experiments of nature made clear to him the relation of cause and effect. Certain simple operations of very early date show traces of purposeful intelligence: drawing foreign bodies (thorns) from the skin with the fingers, laying cooling leaves upon injured places, and smearing the skin with clay as a protection against cold, insects and surface wounds.

Surgery dates from the time when instruments of daily use were used as means of healing. In earliest times flints, thorns, splinters of wood, shells, fishbones, pointed bones, teeth and horns could be used for the extraction of foreign bodies, the opening of abscesses, and with them bloodletting and scarification could be performed. Trephining of the skull was performed as far back as the early stone age. Recent researches have added much to our knowledge of the diseases and injuries of ancient man.

Celsus (53 B.C.–7 A.D.) in his "De medicina libri octo," describes the growth of rational medicine as follows:

> Medicine, even in its infancy, was not deduced from these inquiries, but from experiments; for of the sick who had no physicians, some, from a keen appetite, had immediately taken food in the first days of their illness, while others, feeling a nausea, had abstained from it; and the disorder of those who had abstained was more alleviated; also some, in the paroxysm of a fever, had taken food; some a little before it came on, and others after its remission; and it succeeded best with those who had done it after the disappearance of the fever. In the same manner, some used a full diet in the beginning of a disease; others were abstemious, and those grew worse who had eaten plentifully. These and like instances daily occurring, diligent men observed attentively what method generally answered best, and afterwards began to prescribe the same to the sick. This was the rise of the art of medicine, which by the frequent recovery of some and the death of others, distinguishes what is pernicious from what is salutary; and when the remedies were found, men began to discourse about the reasons of them. Medicine was not invented in consequence of their reasoning, but theory was sought for after the discovery of medicine.

In the study of primitive medicine one is greatly helped by observation of the medicine of those races which even now lead an existence analogous to that of primitive man (aborigines).

Modern anthropologists claim that both religion and medicine had their origin in magic. To primitive man magic was the setting in motion of a spiritual power to help or hurt the individual. Primitive man recognized many of these superhuman agencies relating to disease, such as the spirits of the dead, either human or animal, independent disease demons or individuals who might act by controlling the spirits or agencies of disease. The evidences of magical therapeusis which have descended to our time consist of amulets from the early stone age and from the early bronze age, the former consisting of pieces of bone trephined from the skull after death and carried on a string, the latter of animals' teeth, weasel-bones, cats' claws, birds' windpipes, snakes' vertebrae, etc. The amulet is the oldest form of prophylaxis against disease and originated in the belief that the possession of portions of another body endowed the possessor with their functions. From the original devouring of organs was derived the simpler custom of wearing on the body portions of animals, particularly animals immune against poisons (such as spiders) and polished or odoriferous objects.

THE PERIOD OF THE OLDER CIVILIZATIONS

BABYLONIAN-ASSYRIAN[8]

In considering this period we must remember that the Babylonian-Assyrian-Sumerian, Egyptian, Hindu and Chinese civilizations were practically contemporaneous. Authorities differ as to the date of the beginning of civilization, but all agree that it was between 4500 and 4000 B.C.

The Sumerians founded Babylon about 4500 B.C. They possessed originally a cursive cuneiform writing, running from left to right. About 3800 B.C. they were conquered by the Babylonians and Assyrians, but their writing, speech and culture endured for centuries after their fall. The science of Babylon and Assyria reached a much higher stage than that of Egypt.

Medicine was secondary to religion. Disease was due to evil spirits or demons. There were different incantations for different diseases and medicinal remedies accompanied the incantations. The first recorded observations on anatomy are in connection with the art of divination. The liver was used for this purpose, that of the sheep having been studied as early as 3000 B.C. and hepatoscopy became of extraordinary importance among the Babylonians. Jastrow describes the earliest known anatomical model, a sheep's liver made of clay, dating about 2000 B.C.

The second contribution of Babylon and Assyria to medicine relates to the supposed influence of the heavenly bodies upon man's welfare. This was the beginning of medical astrology.

The third feature in Babylonian medicine is the evidence afforded by the famous Hammurabi code of about 2250 B.C. This code is engraved on a monument which was found in December, 1901, and January, 1902, on the Acropolis of Susa. It is a block of black diorite, nearly eight feet high, broken into three pieces which fortunately were easily rejoined. On the obverse is a bas-relief of King Hammurabi receiving the laws from the Sun God; under this relief are engraved sixteen columns of text, four and a half of which form the prologue. There were originally five more columns on the obverse, but these were cut off by the Elamitic conqueror. There are twenty-eight columns on the reverse, the last five of which form the epilogue.

Hammurabi was the sixth king of the first dynasty of Babylon and reigned for fifty-five years, about 2250 B.C. He was a great soldier and a pious, god-fearing king. He codified the existing laws, that the strong might not oppress the weak, that they should give justice to the orphan and widow, and in general, that wrong be made right. This code shows the importance attached to the fees of physicians as early as 2250 B.C. and that medicine even then was looked upon as a responsible profession.

In 1849 there was discovered on the site of Nineveh a great library of some thirty thousand clay tablets gathered by King Asurbanipal of Assyria (668–626 B.C.). From some eight hundred medical tablets most of our knowledge of Assyro-Babylonian medicine is derived, much of it translated by Morris Jastrow.

EGYPTIAN[9]

The earliest known physician was Imhotep, a medical demigod, the Aesculapius of the Egyptians, who flourished about 4500 B.C. The pharmacopeia of the Egyptians was exceedingly rich, one papyrus mentioned over seven hundred different drugs; hygiene reached a high stage of development. Medicine was associated with magic and was a priestly occupation. The earliest recorded use of secretions and parts of the animal body as medicine is to be found in the medical papyri. While there are isolated fragments, such as the pyramid inscriptions, most of our knowledge of Egyptian medicine is obtained from the medical papyri. The principal ones are the Papyrus Ebers,[10] Westcar (Lesser Berlin),[11] Brugsch (Greater Berlin),[12] Kahun,[13] London,[14] Hearst,[15] and the recently described Edwin Smith[16] papyrus. With the exception of the Smith papyrus, these are essentially magic rolls, containing a hodgepodge of recipes, and were the working tools of superstitious practitioners of demoniacal medicine.

There are three kinds of Egyptian writing: the hieroglyphic, which is the oldest and is used on monuments; the hieratic, the cursive script used in sacred and medical papyri; and the demotic, which is the writing of the people.

The most important of the older papyri is the Ebers, obtained at Thebes in 1872, and dating back to about 1550 B.C. It consists of 110 pages of hieratic script, the text in black letter, the rubrics in red. It is now regarded as a simple compilation, made up from several earlier treatises; a photographic reproduction was issued in 1875 by Ebers.

The Edwin Smith papyrus is the most remarkable medical papyrus in existence, because it contains the most important medical knowledge which has survived to us from ancient Egypt or from any Oriental country. It is a roll 15 feet, 4½ inches in length, with 377 lines on the front and 92 lines on the back, written about 1600 B.C., and was bought by Mr. Smith in 1862. It consists of three parts, drawn from different sources: first, the seventeen columns of the front; second, the incantation of expelling the wind of the year of Pest; third, the incantation of transforming an old man into a youth of twenty. The last two are brief magical treatises. It is the first part which makes the Smith papyrus unique. It contains part of an extraordinary ancient book of surgery and external medicine, which was based on actual cases and classified anatomically, beginning with the skull and proceeding in orderly progression down the body to the spine. Part of the papyrus has been destroyed, but there are remaining forty-eight cases, arranged as follows: skull 1–10; nose 11–17; mandible, ears and lips 18–27; throat and neck (cervical vertebrae) 28–33; collar bone and shoulders (clavicle and scapula) 34–38; thorax and mammae 39–47; and spine 48, incomplete.

Each of the cases is methodically arranged. There is the title, always beginning: "Instructions for . . ." (name of ailment); an examination, always beginning: "If you examine a man having . . ." (symptoms follow); a diagnosis, always beginning: "You should say concerning him: a sufferer with . . ." (name of trouble follows); a verdict, always one of three: "An ailment I will treat" (favorable), "an ailment I will contend with" (doubtful), "an ailment I will not treat" (unfavorable); the treatment; and explanatory glosses.

The description of the cases is most interesting. In speaking of a trouble in the "inaccessible region of the nose" it is recommended that the secretions be cleared away by using two swabs of linen and thereupon two rolls of linen dipped in ointment are placed in the nostrils. The gloss defines the affected region as "the middle of the nose as far as the back, penetrating to the region between the two eyebrows," probably an attempt to define the frontal sinus region.

The most interesting part of the work is the glosses, seventy in number, which are appended to the cases. They are definitions of words and terms and idioms which must have been obsolete at the time the papyrus was copied. It is evident that the original discussion was from an inherited text, which was sufficiently respected so that it was not to be altered by insertion of explanations, but these were appended to the cases. The glosses are in the language of the middle kingdom, several centuries earlier than the Smith papyrus, and probably the copyist found already appended to the text these explanations of the quaint or no longer intelligible words and phrases of his ancestors.

Undoubtedly this papyrus forms part of a great, lost medical book on surgery already so old in about 1600 B.C. that commentaries on the many terms and phrases had long before become necessary. This commentary may already have been several centuries old when copied into the Smith papyrus. It is known that as early as 2800 B.C. there were enough medical rolls to fill a case, and it may be that the Smith papyrus is a copy of one of them. In method and character the Smith papyrus is far superior to all other medical papyri; it contains a systematic arrangement and discussion of cases; each and every case is treated in a routine manner, history, examination, diagnosis, verdict or prognosis, and treatment, and they are arranged in anatomical order. We have here the first attempt at medical classification and the first case history book. The Smith papyrus has not yet been published, but it has been described by J. H. Breasted.

HEBREW[17]

The principal sources of our knowledge of Jewish medicine are the Bible and the Talmud. In the Bible there is not a single reference to the priests acting as physicians; they serve rather as hygienic police in relation to contagious diseases. The physicians were a class by themselves. There were also professional pharmacists and professional midwives. The ancient Hebrews were the founders of prophylaxis. Neuburger states that the chief glory of biblical medicine lies in the institution of social hygiene as a science. The Mosaic mandates contained in the five books of the Pentateuch (Torah) form the beginning, not only of social science, but of medical jurisprudence. The Talmud consists of the laws transmitted by verbal tradition, a body of knowledge which began to accumulate after the Babylonian captivity, about 536 B.C.

INDIAN[18]

The history of Indian medicine can be divided into three epochs: the Vedic, 1800 to 1500 to 800 B.C., the Brahmanistic, 800 B.C. to 1000 A.D., and the Arabic from 1000 A.D.

The Vedic epoch is so-called because its state of civilisation is represented by four Vedas, the holy writings of the East. The Rigveda and the Atharvaveda have the greatest interest from a medical standpoint. The medicine in the Vedas is entirely theurgic and treatment consists of the usual spells and incantations. The Ayurveda, on the science of life, was composed by Brahma and is based on the Rigveda in so far as medicine is concerned, while surgery seems to be derived from the Atharvaveda. The Ayurveda is the oldest medical book of the Hindus and is divided into eight parts: surgery, diseases above the clavicles (such as eyes, nose, mouth, ears), general diseases, demoniacal diseases, diseases of children, toxicology, therapeutics, and disorders of generative organs. According to Wise, the manuscript no longer exists and only fragments are to be found in the Shastras or commentaries on the Vedas. In the Brahmanical period medicine was entirely in the hands of the Brahman priests and scholars.

The three leading texts of Brahmanical medicine are the Charaka, the Suśruta and the Vagbhata. Jee states that both the Charaka and Suśruta are compilations based on the Ayurveda. Of these, the most important is the Suśruta (200 B.C. to 300 A.D.) which is the great storehouse of Aryan surgery. The ancient Hindus were famed for their highly specialized knowledge of operative surgery which remained unimproved by the Greeks and Romans who came after them. The Suśruta describes about 121 different surgical instruments. These had proper handles and were kept sharp and clean. The Hindus apparently knew every important operative procedure except the use of the ligature. They performed lithotomy without a staff, Cesarean section, excision of tumors, removal of omental hernia through the scrotum, amputated limbs, checking hemorrhage by boiling oil cauterization or pressure. They were especially expert in skin-grafting and plastic surgery and their operation for cataract has survived to the present day. They were clever in teaching surgery, the student practicing on plants and dead animals.

What the Suśruta is to surgery the Charaka is to medicine. It dates from about 200 B.C. Indian medicine was weak in anatomy, but diagnosis was carefully made, and semeiology and prognosis combined acute observation with the usual folk superstitions. In the Suśruta there is a recognizable description of malaria, which is attributed to mosquitoes. Inoculation against smallpox has been found in a Sanskrit text antedating Hippocrates.

In the treatment of disease, hygiene and diet were considered of at least equal importance with drugs. The pharmacopeia was rich. The majority of the therapeutic substances were of vegetable origin; Charaka knew five hundred, Suśruta seven hundred healing plants. Animal and mineral substances were also used.

Vagbhata is supposed to have flourished sometime between 200 B.C. and 700 A.D., according to different authorities. His style was very clear and concise, but he added nothing to what is contained in the Suśruta or Charaka.

PERSIAN[19]

The medicine of ancient Persia, like that of India, owes its origin to primitive Aryan medicine. Our knowledge is obtained from the religious writings, the Zend-Avesta. The book of the Law devotes almost the whole of the last three chapters to medicine. The treatment of the sick was in the hands of the priests, and consisted in the casting out of the demons of disease by purification supplemented by the use of water and herbs. Physicians' fees were arranged according to a definite scale depending on the patients' means and were frequently paid in kind.

CHINESE AND JAPANESE[20]

The medicine of the Chinese presents the same picture today as thousands of years ago. The earliest of the Chinese classics upon which medicine is based are the works of Huang-ti, 2697 B.C. They were done in lacquer upon strips of bamboo or palm leaves. These tadpole ideograms, the analogue of the Egyptian picture-writings, were later modified and done with pen and paper. This book of Huang-ti gives valuable measurements of the bones and alimentary tract. Physical anthropometry is clearly of Chinese origin. Angiology and osteology were studied as topographic aids to acupuncture (2697 B.C.), cauterization and to the practice of what might now be called osteopathy. There is good evidence that dissection was performed, usually upon the bodies of executed criminals. The Chinese were wonderfully clever at massage and were acquainted early with identification by finger-prints. The doctrine of the pulse reached such extraordinary development that the whole practice of medicine centered round its different characters. Organotherapy was as extensively practiced in China as in Egypt; acupuncture reached a remarkable development and inoculation for smallpox was practiced as early as the eleventh century.

Japanese medicine to 96 B.C. was passing through the mythical phases common to all forms of early medicine. The earliest Japanese medical book[21] was not published until 982 A.D. This late beginning of medical literature by them has fortunately not interfered with their wonderful progress in recent years.*

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*Note: It is the author's intention to continue his account of the story of medicine from where he leaves it in this paper bringing it up to modern times.

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THE CONFLICT OF MEDICINE WITH QUACKERY

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THE subject of the conflict of medicine with quackery cannot be discussed properly without a preliminary consideration of the derivation and meaning of the word quackery. Unfortunately authorities are not unanimous in their opinions: some think the term came from the German word quack-silver, since the irregular practitioners first used it upon the appearance of syphilis; others claim, more correctly, that the word is an abbreviation of quacksalver and that to quack is to utter a harsh, croaking sound like a duck or to talk noisily and to make vain and loud pretentions, while salver refers to one who undertakes to perform cures by the application of ointments or cerates. Another authority declares that the word quack is derived from an ancient Saxon word meaning small, slender and trifling and that this term was consequently applied to shallow and frivolous itinerant peddlers who foisted upon a credulous community such wares as penny plasters, balsams of licorice for coughs, snuffs for headaches and infallible eye lotions. Still another authority has claimed the word is a corruption of quake and that the treatment of patients with intermittent fever in marshy districts by ignorant persons who claimed to be able to charm away the disease, caused the latter to be styled quake-doctors.

Sixty-four years ago my father, speaking at the fourth anniversary meeting of the Medical and Surgical Society of Baltimore, took as his subject "Quacks and Their Success." He defined medical quackery as "that mode of practising medicine which takes one idea and applies it to all kinds of diseases without reference to their origin, or administers one remedy for all possible diseases." This is done generally by one who uses "pompous pretenses, mean insinuations and indirect promises so as to secure the patient's confidences which neither success or experience entitles him to gain." We learn that the outward requisites to obtain this recognition in 1678 were defined as follows:

> A decent black suit, and (if your credit will stretch so far in Long Lane) a plush jacket, not a pin the worse though thread-bare as a Taylor's cloak: it shows the more reverend antiquity. Like Mercury you must always carry a caduceus or conjuring Japan in your hand, capt with a civet box; with which you must walk with Spanish gravity as in deep contemplation upon an arbitrament between life and death. A convenient lodging, not forgetting a hatch at the door; a chamber hung with Dutch pictures, or looking-glasses, belittered with empty bottles, gallipots, and vials filled with tap-droppings or fair water, coloured with saunders. Any sexton will furnish your window with a skull, in hope of your custom, over which hang up the skeleton of a monkey to proclaim your skill in anatomy. Let your table be never without some old musty Greek or Arabick author, and the 4th book of Cornelius Agrippa's "Occult Philosophy," wide open to amuse spectators; with half a dozen of gilt shillings, as so many guineas received that morning for fees.

The directions further enjoin the prospective quack to oblige neighboring alehouses to recommend him to inquirers and hold correspondence with all the nurses and midwives nearby to applaud his skill at gossipings. They go on also to advise loquacity and impudence, but if the quack has an impediment in his speech or cannot by training become glib of utterance, he is advised to persevere in a habit of mysterious silence rendered impressive by grave nods of the head.

The history of medicine has been traced to very remote times, but as there was no real knowledge of the science and art of medicine in those early periods, it cannot be well distinguished from quackery. Rational medicine founded upon observation was not known until it was introduced by Hippocrates, the father of medicine, who lived from 460–377 B.C. At that time the profession was largely hereditary in character and Hippocrates is said to have been the seventeenth in lineal succession from Asklepios. There were no specialists, for medicine and surgery were practiced by all who would cultivate the healing art and, with the possible exception of India, no legal requirements were in force until the thirteenth century. In India we find in the Ayur Veda, written some six hundred years before Christ, information upon the study of medicine with the statement that upon the completion of his studies the candidate had to petition the king to grant him authority to practice independently. But in the Occident, without any universal regulation for the practice of medicine, quacks were found in this period as well as earlier, and Hippocrates berated those who relied on amulets and charms to cure disease. According to him the true physician should possess a mind of such serenity as to be above superstition which is incompatible with knowledge of the truth.

THE QUACK DOCTOR AFTER K. DUJARDIN
(By J. J. Boissieu, 1773)

For many centuries Greek medicine reigned supreme, but in Roman times, at least down to the empire, the physicians fell into disrepute.

They were not a professional body, scarcely a specific group: they mixed, a motley gang, in a world of all shades and confusions, "*augur, schoenobates, medicus, magus,*" good and bad, instructed and uninstructed, freemen and slaves, reputable and disreputable, straight and crooked, honest and profligate, some loyal and gentle, others sycophantic, avaricious and treacherous.

Quisque volens faciat medicinam. Yet even in this variegated throng are found the names of such physicians as Antonius Musa, the skilful physician of Augustus, the beloved friend of Virgil, Horace and Maecenas, or Meges whom Celsus praised as the very wise, or others equally illustrious. That quacks, however, preponderated is not surprising since Thessalus, Nero's physician, endeavored to make cooks, dyers, spinners, cobblers and weavers into doctors in six months, although these pupils could not write or even speak correctly. They were frequently so skilful in the art of getting practice that Galen compared the doctors in Rome to robbers, the only difference being that the doctors practiced in the cities, while the robbers practiced their profession among the hills. It was an age of specialism when every part of the body was represented, fistula and rupture specialists being especially prosperous. We can readily imagine that there was every opportunity for the charlatan to ply a thriving trade. The names of many of them have come down to us but an account of one will suffice. Lucius Horatillavus was a quack who lived in the time of Augustus. He was a handsome man, who had come to Rome from Naples adorned with a toga containing obscene pictures and a small Asiatic mitre. Like many of his kind in that day he sold poisons and was reputed to have invented five or six new remedies. Early in his career he was fortunate enough to cure his patient, Titus Cnoeus Leno, a poet, who sang his praises so highly that his practice became so profitable he is said to have saved 150,000 sesterces in a few months and in ten years had accumulated a fortune of 6,000,000 sesterces. He had a villa in Tusculum whither he went three times a month to lead a luxurious life amongst most beautiful surroundings. Unfortunately later a Roman lady, Sulpicia Pallas, died suddenly while under his treatment and the public accused him of poisoning her. Subsequently he poisoned some of his fig trees on his own estate to prevent further depredations from the birds and accidentally ate one of the figs, quickly dying in convulsions. His epitaph, which he himself composed, read: "The *manes* of Sulpicia Pallas have avenged her. Here lies Lucius Horatillavus, physician, who poisoned himself." The manner of his death, one writer states, proves that it was accidental, as few quacks are bold enough to take their own medicine.

Between the seventh and eighth centuries a medical school was founded at Salernum in Italy which soon achieved so great a reputation that the town was known as the Hippocratic city, and a hospital was founded there in 820 in which much attention was given to practical medicine.

> The school's anatomy was based upon that of swine, the physiology and pathology were Galenic, its diagnosis mainly pulse and urine lore, but diseases were studied first-hand, in a straightforward, spontaneous manner, therapy was rational with an admirable scheme of dietetics, Salernian surgery was new and original, and obstetrics and nursing were ably cultivated by talented women.

Its teachers were the first medieval physicians to cultivate medicine as an independent branch of science and the first attempt to organize medical men into a regular profession came from this school, for Roger II of Sicily in 1140 A.D. promulgated an ordinance to regulate the practice of medicine. It reads:

> Whosoever from this time forth desires to practise medicine must present himself before our officials and judges and submit himself to their decision. Any one daring to neglect this shall be punished by imprisonment and confiscation of his goods. This decree has for its object the protection of the subjects of our kingdom from the dangers arising from the ignorance of practitioners.

It required preliminary studies at the university and four years of medical studies as the minimal requisites for the degree of doctor of medicine, a degree which was a certificate authorizing teaching. One hundred years later Frederick II, Roger's grandson, confirmed this law and gave to

Salernum a curriculum for those who wished to study medicine there. It will be well to quote the beginning of this law.

> While we are bent on making regulations for the common weal of our loyal subjects, we keep ever under our observation the health of the individual. In consideration of the serious damage and the irreparable suffering which may occur as a consequence of the inexperience of physicians, we decree that in future no one who claims the title of physician shall exercise the art of healing or dare to treat the ailing, except such as have beforehand, etc., etc.

The law then went on to require a previous study of logic for three years and five years more for the pursuit of medicine during which period the candidate must acquire a knowledge of surgery (for this forms a part of medicine). After this if he passed the prescribed examination of the authorities and produced a certificate showing he had completed the course of study, he might be allowed to practice. But even then he must not practice on his own account, but for a full year more must consult an older experienced practitioner in the exercise of his profession. If anyone transgressed this law and endeavored to practice without a license he was subject to punishment by confiscation of his property and imprisonment for a year.

The decree of Frederick II had little effect in suppressing quackery, yet it raised the status of the respectable physician and caused the promulgation of similar ordinances in Spain in 1283, Germany in 1347 and a confirmatory ordinance by Joanna of Naples in 1365. Physicians were also brought into the limelight as *medici publici* as they were required to determine the possible existence of leprosy in suspected persons in order to fix their civil status. The rise and growth of medieval universities also tended to elevate the medical profession, although in the dark ages there appears to have been no definite line of demarcation between the qualified practitioner and the quack. It is true, however, that the University of Paris in 1220 had issued a statute against irregular practitioners (*contra illicite practicantes*) and another statute in 1271 forbidding Jews and Jewesses to practice medicine or surgery on any Catholic Christian. It also forbade surgeons (whether men or women), apothecaries (male and female) and herbalists (of either sex) to visit sick people, to practice any operation or administer any medicine, except certain confections in common use, unless in the presence and under the direction of a physician, under pain of excommunication, imprisonment and fine, but these statutes may have been to keep the surgeons in proper subordination to the physicians. For surgery was then largely in the hands of empirics, while medicine was controlled by the monks who were the chief exponents of learning. We must remember also that excommunication, although awkward in making the individual an outcast from society, was not particularly blighting to ordinary offenders and we find instances of individuals repeatedly condemned in this way for the same offense.

Henri de Mondeville, surgeon to Philip the Fair of France, in the beginning of the fourteenth century devotes much attention to quacks. After describing the training necessary for the practice of the art of surgery he goes on to say:

> And whoever shall enter or pretend to have entered in any other manner into the fold, will enter like a thief, and not by the gate, as do all illiterate persons, such as barbers, fortune tellers, impostors, forgers, alchemists, prostitutes, procuresses, midwives, old women, converted Jews, Saracens, and so to speak, all those who have foolishly squandered their substance. They give themselves out for surgeons to get a living, and to hide under the mantle of surgery their poverty and deceits, and to penetrate under the cloak of a man of art into cities and kingdoms, spying out secrets in order to reveal them to the enemies.

He declares that the vulgar cannot distinguish the skilled man from the unskilled, as Hippocrates had previously pointed out.

Therefore it happens that in the practice of this art ignorant deceivers make a fortune and gain a brilliant reputation whilst men of knowledge who have training and experience are crushed and often live poor and beggarly. But it is more than surprising, it is absurd, that not only those of whom I have just spoken, but kings, princes, canons, rectors, monks, dukes, nobles and burgesses, meddle without knowledge in the handling of dangerous surgical cases, and especially in the treatment of diseases of the eyes, a subject dangerous, difficult and fallacious to such a degree that there is seldom found a surgeon possessing adequate skill in such matters.

Largely through Mondeville's influence an edict against unqualified practice was promulgated in France by Philip the Fair in November, 1311. It intended to forbid anyone to practice surgery in Paris without first having been examined by the sworn master surgeons of Paris convoked by the first surgeon to the king, who alone is declared to have the right to grant a license to practice the art. Those who have been thus examined and approved must, before practicing, take oath before the provost of Paris that they will practice their profession conscientiously and not visit or dress any wounded person wherever found unless it be for the first time. Immediately after that visit they were to reveal the wound to the provost of Paris or other constituted authority. The banner or signs of all surgeons (male and female) not approved and sworn were to be burned publicly in front of their houses and their owners were warned not to practice without having passed an examination or taken the oath. If any of them then refused to take the oath, they were to be forbidden to practice and if contrary to this edict they continued to do so, they were to be punished *prima ratione* by the provost with such severity as their offence might require. This edict was the first ordinance against the illegal practice of medicine which was ever passed and served as the basis of similar ordinances for a long time. Unfortunately the civil authorities appear to have been unable to enforce it and the medical faculty of Paris appealed to Pope John XXII in 1325, asking him to suppress unqualified practice as an abominable crime, and in 1347 made a similar appeal to Pope Clement XVI. Forty-one years after the above edict was adopted, by another ordinance no person was allowed to practice surgery in Paris without having been examined. This was reenacted in 1364, half of the fines being assigned to the brotherhood of St. Cosmas and St. Damian. This brotherhood was composed of surgeons who were honorable practitioners before the date of any legal recognition of their status, and had ordinances and statutes first enacted concerning it in 1268 at the instigation of Jean Pitard. Further regulations were passed concerning this order in 1301 by which it was given power to expel unworthy members. In 1381 Charles VI confirmed the ordinance of 1364 and in letters patent dated August 3, 1390, forbade the practice of medicine and surgery to those who were not competent in the art.

Although, as we have seen, Frederick II had united surgery with medicine in his edict, the two branches were soon separated. This has been said to have been due partly to the influence of the clergy. There was at first no faculty, the teaching was free and given wholly in private schools, the teacher being paid by his pupils. The inability of the civil authorities to enforce the laws against illegal practice probably led it to be taken up by the church so that finally the church concerned itself also with medical instruction, but it was not until 1220 that Cardinal Conrad gave statutes to three medical schools when he placed them under the jurisdiction of the bishop. By these statutes the private schools were not abolished, but were placed in a *studium generale* or university, becoming thus under a common jurisdiction. The degrees conferred by the university were those of bachelor, licentiate and master, but the two lower ones were sufficient to earn the right to practice medicine, permission to practice being in the power of each town after the applicant had undergone a perfunctory examination. The title of doctor of medicine then did not guarantee that its bearer possessed proper medical knowledge, for emperors, popes and their plenipotentiaries and the counts palatine were accustomed to bestow it. In fact, at Naples down to the last century the D'Avellino-Carraciolo family enjoyed the privilege of conferring the degrees of doctor of medicine and doctor of laws. It even made extensive use of this privilege and found it correspondingly profitable. In 1350 an edict was published by John II against practicing medicine without the title of master or licentiate of Paris or some other *studium generale*.

In the fourteenth century specialists were rampant, for dentists, aurists, perambulant surgeons who cut for stone, operated for hernia, eye diseases, etc., abounded. Some practiced with a license, others without it. We are informed that for dressing a hernia the payment in addition to a lodging was a sheet; for cutting a stone a tablecloth; for operating on a cataract two napkins or two head coverings. These prerequisites were claimed in addition to the fees. The surgeons who were afraid to operate employed quacks, who at this period overran France and vaunted their skill in hernia and lithotomy operations. Some of the specialists in the latter would make an incision through the skin of the perineum and then produce a stone from their sleeves. Toward the close of the sixteenth century especially, mountebanks were wont to go from town to town attired in a showy fantastic garb, proclaiming in the market places and at the annual fairs their ability to cure every ache which the human flesh is heir to, including consumption, deafness and many incurable diseases. Unfortunately they secured many dupes who bought freely of their marvelous remedies.

In England the first attempt to obtain legal control of medical practice was made by the physicians in 1421. Nothing came from it, but in 1511 in the third year of the reign of Henry VIII an act was passed for the regulation of medical and surgical practice. The preamble to the act reads as follows, the last sentence forbidding practice without an examination:

> Inasmuch as the science and cunning of Physic and Surgery are daily within this Realm, exercised by a great number of ignorant persons of whom the greater part have no insight in the same, nor in any other kind of learning. Some also ken no letters on the book; so far that common artificers, as smiths, weavers and women, boldly and accustomably, take upon them great cures, in which they partly use sorcery and witchcraft, and partly apply such remedies to the disease as being very noxious and nothing meet; to the high displeasure of God, great infamy to the Faculty, and the grievous damage and destruction of divers of the King's people most especially of them that cannot discern the cunning from the uncunning. . . . Any person within the City of London or within seven miles of the same to exercise and occupy as a physician or surgeon except he be first examined, approved and admitted by the Bishop of London or by the Dean of St. Paul's for the time being, calling to him or them four doctors of physick and for surgery other expert persons.

So much dissatisfaction was created by this act, however, that finally it was "ordained, established and enacted of this present Parliament that at all times from henceforth it is lawful to any person, being the King's subject, having knowledge or experience of the nature of herbs, etc., to minister in and to any outward sore or wound according to their cunning." Fortunately for the people of England this state of things did not continue long, for in 1518 the College of Physicians was founded with a charter giving it much power for the suppression of quackery. It was entrusted with absolute control of false medicines and false practice, with summary powers in London and seven miles around for the committal to prison of quacks, and with authority to seize their wares. It is to be regretted that the college has failed in this duty, although Walsh thinks the law is not yet a dead letter. The later history of

France, England and other countries of the old world down to the present day is replete with laws and ordinances similar to those which I have already described. They aimed and still aim to regulate the practice of medicine and prevent quackery.

I have already spoken of a Roman quack, Lucius Horatillavus, and mention might also be made of others who have given cheap fame to this ignoble group in Europe during the succeeding centuries. Although the healing touch for the king's evil and other diseases was supposed to be a royal prerogative, yet it is interesting to note that one of the king's subjects claimed to have also possessed it, Valentine Greatrakes, who was first the dupe of his own imagination and finally a quack. He was born at Affane, in the county of Waterford in Ireland, on February 14, 1628, and claimed to have discovered this supernatural gift while living the life of a country gentleman. For some time he kept the secret, but finally revealed it to his wife who was unkind enough to laugh at him. Nothing daunted, he tried his powers upon the people in his neighborhood and is said to have cured so many that his fame was noised abroad. The bishop's court at Lismore then prohibited him from laying on hands in the future by an injunction. This he bodly disregarded and continued to ply his trade with such success that many titled victims came into his clutches. One contemporary account states that "Mr. Greatrakes was possessed of some peculiar temperament, as his body was composed of some particular ferments, the affluvia whereof being introduced, sometimes by a light, sometimes by a violent friction, restore the temperament of the debilitated parts, regenerate the blood, and dissipate the heterogeneous ferments out of the bodies of the diseases, by the eyes, nose, mouth, hands and feet." Finally he was summoned by Lord Conway in London to cure his wife of a terrible headache which had baffled the skill of the leading London physicians. The headache unfortunately did not yield to his treatment, but he cured others in the surrounding district of their ailments. His popularity, however, rapidly declined, so that finally, discredited and humiliated, he retired to his estate at Affane and died in obscurity.

One great field for quacks was in the realm of eye diseases and William Read, later Sir William Read, is a notable example of a quack in this specialty. He was of humble origin, starting his life as a tailor, although possessed with the vision of a seer, for he foresaw the emoluments which might accrue from charlatanism. He rented an office in the Strand and hired some one to write a book on eye diseases for him and a Grub Street poet to laud him to the skies. By these means he became so renowned an oculist that Queen Anne fell a victim to his charm. At her death he became oculist to her successor, George I and although the butt of the coffee house wits, was able by his effrontery and wealth to induce them often to accept his hospitality. Dr. Roger Grant, another of these quacks or sworn oculists who were patronized by Queen Anne, should also be mentioned here. He was a former cobbler and Anabaptist preacher who published circumstantial and minute accounts of his cures. His plan was to secure some poor individual with imperfect vision and, after treating him with medicine and half crowns for a week, secure from him a testimonial that Grant had cured him in little more than a month, although he had been born stone-blind. This certificate was attested to by the clergyman and the church wardens of the patient's parish. If, however, they refused to do it, Dr. Grant did not scruple to sign their names himself or have his agents do so.

Chevalier Taylor should likewise be included in this group as he has come down to us as one of the most impudent quack oculists on record, whom Dr. Johnson has described as the most ignorant man he ever knew. He was the son of a female apothecary at Norwich and had worked with Cheselden at St. Thomas'. He had invented a cataract needle and other instruments, but the narrow path to success was too stony for him, so the open fields of quackery lured him away upon the adventurous career of a roving oculist. He became a mountebank without the slightest particle of shame who traveled around from town to town, especially during the period of village fairs, with the utmost effrontery, fleecing the public indiscriminately. Of pleasing address, clad in black with a long flowing wig, he lectured with great assurance and with much bombast before multitudes at these fairs and operated upon all who would submit to his quackery. The method of operating he would adopt in crosseye was to scarify the good eye, put a bandage over it and then ask the patient to focus with the bad eye, a feat which of course they could perform if the bad eye had not been crossed for too long a period. His curious biography, said to have been written by his son, and his own "History of the Travels and Adventures of Chevalier John Taylor" give us many glimpses of his remarkable life. At length in 1767 realizing that the credulity of his fellow countrymen had been exhausted, he left England and died in a convent at Prague five years later.

Joshua Ward, called Spot Ward from a claret mark on his face, is the next quack on our list. Though born of a good family, his early life was obscure until he entered Parliament as a member for Marlborough, but upon investigation it was found that there was either fraud or mistake about his election as he had not received a single vote. He was accordingly unseated and later seems to have gotten into political trouble in both England and France. Soon after his return to England he reduced a dislocated thumb for George II and thus ingratiated himself in the king's favor so that he was provided with a room in the king's almonry at Whitehall where the poor people were treated at his Majesty's expense. His patients included Lord Chesterfield, the historian, Gibbon, and the novelist, Fielding, among a large number of less distinguished personages. He made a large fortune by the sale of antimonial pills and drops, a liquid sweat, a dropsy purging powder and other nostrums. His essence for headache and paste for fistula later appeared in the pharmacopoeia. He died at Whitehall in 1761.

The most impudent of all quacks was probably James Graham who first tried out his prowess as a quack oculist and aurist in Philadelphia, where he picked up some knowledge of electricity from hearing about Dr. Franklin's experiments. He was of handsome physique, with aquiline features and pontifical manner. In 1780 he opened in London his Temple of Health which consisted of a sumptuously furnished apartment resembling with its perfumes, soft music and bacchantic poses an Oriental interior. Admission was procured for six guineas and immediate conception for the barren was guaranteed for a fifty-pound note. In two years, however, the charlatan was exposed and the Temple of Health was closed.

St. John Long is another of the notorious quacks of modern times. Of Irish birth and lowly origin, he started out early in life as a portrait painter and teacher, but the emoluments of quackery soon led him to forsake these occupations for the latter. His chief remedy was a liniment which had oil of turpentine and a mineral acid as its chief ingredients. This was harmless if applied to a healthy part, but when used upon a surface under which any seeds of disease were hidden, a sore soon developed which he usually healed by the application of cabbage leaves. He also employed a vapor from a mixture of his own concoction which was used in many diseases, especially consumption. Starting in practice in Limerick he soon found it too tame for him, so he migrated to Harley Street in London where his enormous practice was composed chiefly of women. From July, 1829, to July, 1830, his fees amounted to £13,400. He was twice tried for manslaughter but escaped conviction, being let off the first time with a fine of five hundred pounds, which he promptly paid, and the second time freed because the medical evidence was so shaky that the judge gave him the benefit of the doubt. He continued to flourish upon the folly of dupes until his death from consumption in 1834 at the age of thirty-seven years. I must not tire you further with an enumeration of the antics of Mesmer, Cagliostro, the Taylor brothers, Mr. and Mrs. Loutherbourg, the female impostors Mrs. Mapp and Joanna Stephens and other notorious quacks. Let "oblivion scatter its poppy" over them, for they were never "numbered amongst those who have left a name behind them that their praises might be reported."

In our own country conditions similar to those in France, England and elsewhere are found for, as Dr. John Brown has written, "Quackery and the love of being quacked are in human nature as weeds are in our fields." In the early history of our country without any regulations for the practice of medicine quacks of all kinds abounded. The earliest law making a distinction between doctors qualified by diplomas and those who had no degrees was one passed by the Virginia assembly in 1736 which was designated "An Act for Regulating the Fees and Accounts of the Practicers of Physic." In it those persons who had studied in any university and taken a degree therein were allowed to make a higher charge than the surgeons and apothecaries who had served an apprenticeship in those trades. In 1758 William Smith wrote in his history of New York:

> A few physicians among us are eminent for their skill. Quacks abound like locusts in Egypt and too many have been recommended to a full practice and profitable subsistence. This is less to be wondered at, as the profession is under no kind of regulation. Loud as the call is, to our shame be it remembered, we have no law to protect the lives of the King's subjects from the malpractice of pretenders. Any man, at his pleasure, sets up for physician, apothecary and chirurgeon. No candidates are either examined, licensed or sworn to fair practice.

Connecticut also resembled the other states. Towards the end of the eighteenth century Dr. Lemuel Hopkins of Hartford wrote a most sarcastic poem upon the cancer quack. In this poem is described a man who had a pimple near his nose. Lured by a quack's advertisement he starts for treatment when, captivated by the promises of a second quack, he allows the latter to treat him. Of course the quack tells him the pimple's name is cancer, and adds:

> But courage friend, I see you are pale,
> My sweating plaisters never fail;
> I've sweated hundreds out with ease,
> With roots as long as maple trees;
> And never fail'd in all my trials,
> Behold these samples here in vials.

During the course of treatment the patient dies and the moral of the poem follows:

> Go, readers, gentle, eke and simple
> If you have wart, or corn, or pimple
> To quack infallible apply;
> Here's room enough for you to lie.
> His skill triumphant still prevails,
> For Death's a cure that never fails.

A few years later, in their efforts to prevent quackery, the Connecticut Medical Society recorded a vote in their transactions by which we learn that one of their members had "gleaned up from the miserable remains of animal magnetism a practice of stroking with metallic instruments the pained parts of human bodies, giving out that such strokings will radically cure the most obstinate pain to which our frame is incident." This individual had also patented these instruments to aid such delusive quackery and had gone abroad for their exploitation so that the Society desired their secretary to cite any member who used them and bring him before them at their next meeting to answer for his conduct. The guilty author or inventor of these instruments was Dr. Elisha Perkins of Plainfield, Connecticut, who was expelled from the Society in the following year. He was the son of a worthy graduate of Yale and is said to have studied there himself for a short period. He finally gave up his practice to exploit these instruments which resembled horse shoe nails of brass and steel. The country went wild over them, testimonials came from the learned and the unlearned; but one recommendation which has come down to us is a little skeptical as to their benefits, yet the author states he had "found them also useful in picking walnuts." On the other hand, Prof. Josiah Meigs of Yale was a firm believer in them and writes: "I have used the tractors with success in several other cases [besides his son's] and although like Naaman, the Assyrian, I cannot tell why the water of Jordan should be better than Abena and Pharpar, rivers of Damascus, yet since experience has proved them so, no reasoning can change the opinion." Later the tractors, as they were called, were taken to England by the inventor's son, a graduate of Yale, who rented John Hunter's house in Leicester Square, established a Perkinean Institution for their use in the disorders of the poor and returned to this country in eight years with a fortune of £10,000. This blatant quackery, coupled with a desire to improve the equipment of the doctors of Connecticut for their life work, led Yale jointly with the Connecticut Medical Society to found the Yale Medical School in 1810, so that, as I have said elsewhere, if Yale is the Alma Mater of her medical graduates, then just as surely is the medical society their Almus Pater.

There is no need to discuss at length the various cults which have had their origin in this country. It might be worth while, however, to call attention to some of the senseless twaddle from the book of a cult which calls itself Christian and then with further matchless effrontery adds the word Science to its designation.

> The daily ablutions of an infant are no more natural or necessary than would be the process of taking a fish out of water every day, and covering it with dirt, in order to make it thrive more vigorously thereafter in its native element. "Cleanliness is next to godliness," but washing should be only for the purpose of keeping the body clean, and this can be effected without scrubbing the whole surface daily. Water is not the natural habitat of humanity. I am not patient with a speck of dirt; but in caring for an infant one need not wash its little body all over each day in order to keep it sweet as the new blown flower. . . .
>
> If patients sometimes seem worse while reading this book the change may either arise from the alarm of the physician or mark the crisis of the disease. Perseverance in its perusal has generally healed them completely.

The founder of another cult which does not believe in drugs or surgery, when his own death seemed imminent, threw his beliefs to the winds, entered a hospital under an assumed name, giving his occupation as a real estate dealer, and submitted to the removal of a gangrenous appendix. After his recovery, however, he reverted to his old beliefs and was just as violent in their justification as ever. Again, another quack in a nearby town, an ardent antivaccinationist, preached in and out of season upon the evils of vaccination. Finally, when a smallpox epidemic descended upon his town he went with his wife and child on a dark night down a side street to a doctor's office, where he submitted himself and his family for vaccination, for as Satan hath said: "All that man hath will he give for his life."

Gradually each state in the union has passed laws regulating the practice of medicine in the endeavor to prevent quackery, but unfortunately the relationship between quackery and the public is unchanged, being the same now as it was in 1783 when a London physician wrote:

> No laws will ever be able to prevent quackery, while people believe that the quack is an honest man, as well qualified as the physician. A very small degree of medical knowledge, however, would be sufficient to break this spell, and nothing else can effectually undeceive them. It is the ignorance and credulity of the multitude with regard to medicine, which renders them such an easy prey to every one who has the hardiness to attack them on this quarter. Nor can the evil be remedied by any other means

but making them wiser. The most effectual way to destroy quackery in any art or science is to diffuse the knowledge of it among mankind.

The propaganda department of the *Journal of the American Medical Association* first dealt with ethical proprietary medicines but gradually it broadened its scope until the patent medicine evil and quackery were also considered. By these means this department became universally recognized so that today thousands of letters from laymen are annually received and answered by it. The material in this department has now been gathered into two volumes dealing with the medicines sold for prescription purposes or the so-called proprietary remedies and two more volumes have been issued dealing with nostrums of the home remedy type and also with the cruder forms of quackery. The former volumes are designated as "Propaganda for Reform in Proprietary Medicines," while the two latter bear the title "Nostrums and Quackery." They have also published in book and pamphlet form Samuel Hopkins Adams' articles on the great American fraud which first appeared in *Collier's Weekly* during 1905, 1906 and 1907, and Street's valuable book entitled "Composition of Certain Patent and Proprietary Medicines." In addition to these volumes a large number of illustrated pamphlets which deal with the patent medicine evil and quackery are issued by this department, while its educational posters concerning themselves with the nostrum evil and quackery and supplemented by stereopticon slides cover nearly every phase of patent medicine exploitation and quackery. This campaign by the American Medical Association has thus far been most praiseworthy. Similar efforts have been made in other countries, especially in England where the *British Medical Journal* (the organ of the British Medical Association) issued in 1909 and 1912 two volumes entitled "Secret Remedies" and "More Secret Remedies," which give the composition of the various quack medicines. In 1911 they also issued a number of their journal devoted almost wholly to quackery.

The conflict of medicine with quackery is not irrepressible, for quackery can be checked by the enactment and enforcement of wise laws combined with a perpetual public campaign of medical education. By these two means together, and not by the former alone, can the battle be won. But the pity of it is seen in the countless lives of the gullible public which quackery has killed, maimed and fleeced, along with the unenviable notoriety and misrepresentation it has given the medical profession. This latter fact is well expressed in the following lines from the *Regimen Sanitatis* of the School of Salernum:

There is no fool whate'er the sex or grade,
. . . .
. . . .
. . . .
But has his name among wise Doctors placed
And thus through greed the Healing Arts disgraced.

ELISHA KENT KANE* (1820–1857)

By W. M. KERR

LIEUT. COMMANDER, MEDICAL CORPS, U. S. N.

ELISHA KENT KANE was related to four prominent colonial families, the Kanes and Van Rensselaers of New York and the Grays and Leipers of Pennsylvania. His great-grandfather, John Kane, who came from Ireland in 1756, married Miss Kent, a daughter of the Reverend Elisha Kent, a descendant of one of the earliest settlers of Massachusetts. His great-grandmother on the maternal side was Martha Ibbetson before her marriage. It is known that in 1749 she lived in London in the family of a surgeon apothecary and acted as his assistant. When she had acquired as much of the art of healing as he was able to teach her, she emigrated to America. A year after her arrival in Philadelphia, she married George Gray of Gray's Ferry, a man of great wealth and a zealous Whig. Although born a Quaker, at the earliest period of the Revolution he was a member of the Council of Safety and a representative of the resistance party in the assembly of the province. His wife also was a staunch patriot and was actively devoted to the service of liberty.

During the occupation of Philadelphia by the British forces in the winter of 1777, the American prisoners were herded together in the old jail on Walnut Street where they were treated as culprits under arrest and not as prisoners of war. Their existence was made miserable by the jailer, named Cunningham, who proved his total unfitness for such an office by wanton cruelty and abuse. Mrs. Gray constantly ministered to the wants of the prisoners, some nine hundred in number. Food and medicines were supplied at her own expense. Her work won the admiration of Lord Howe, and the American officers who witnessed and benefited by her generous services to the prisoners acknowledged them in the following testimonial:

> We, the subscribers, officers of the American Army, now prisoners in Philadelphia, think it our duty in this manner to testify the obligations we are under, and the respect we entertain for Mrs. Martha Gray, wife of George Gray, Esq., for her unwearied attention to the distresses of the numerous sick and wounded soldiers in confinement, supplying them, at a great expense, with food and raiment, constantly visiting and alleviating, by her attention, their wretched condition, and in every circumstance interesting herself in their behalf. As we have

E. K. Kane.

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* For much of the material appearing in this article, the writer is indebted to the "Biography of Elisha Kent Kane" by Dr. William Elder, Phila., 1858.

been eyewitnesses to the above, we have here unto set our hands.

Philadelphia, January 29th, 1778.
W. Taliaferro,
Lt. Col. 4th Virginia Battal.
O. Towles,
Major 6th Virginia Battal.
John Hannum,
Chester Co. Militia
Pers'n Frazer,
Lieut. Col. 5th Penna. Regt.
Luke Marbury,
Col. 4th Bat. Maryland Militia

Afterward, when the tide of affairs had turned and British prisoners needed the aid of Mrs. Gray, it was given freely. This estimable lady was assisted in all these labors by her daughter Elizabeth who later married Thomas Leiper.

Thomas Leiper, it is recorded in the chronicles of the times, was first sergeant of the First Troop of Philadelphia City Cavalry raised for the continental service; that later he carried the first money from Congress to General Washington at Boston; that he was at the side of the Commander-in-Chief at the battles of Trenton, Monmouth, Princeton, New Brunswick and Brandywine. A friend of Robert Morris and ardent in the support of his financial policy, he was one of those patriots who, each lending one-third of his personal estate to the old Bank of North America,[1] enabled Morris to make provision for the march of the army to Yorktown. At the end of the Revolutionary War, Leiper and his troop received a letter of thanks from General Washington for their services in the field. It is interesting to record that the members of the First Troop of Philadelphia City Cavalry gave to the Pennsylvania Hospital the entire sum received by them for services during the Revolution: the maternity ward was built and endowed with this money.

The daughter of Elizabeth and Thomas Leiper, Jane Leiper, married John K. Kane, the son of John Kane and a Miss Van Rensselaer of New York. He was born in Albany, New York, in 1795. Graduating from Yale in 1814, he was admitted to the bar in 1817, began practice in Philadelphia, became attorney-general of Pennsylvania in 1846 and United States district judge for Pennsylvania in 1856. From this union Elisha Kent Kane was born February 3, 1820 at 191 Walnut Street, Philadelphia. He was the eldest of seven children.

It is said that as a small boy Elisha Kent Kane manifested no extraordinary love for learning the lessons set him by his teachers and accordingly his schools and masters were frequently changed. "To arbitrary authority he was a regular little rebel." He was assiduous, however, in the pursuit of knowledge which interested him. He was absolutely fearless and throughout the history of his childhood one notes his physical hardihood and perseverance in doing everything that seemed difficult of accomplishment, without other aim than mere achievement.

His father, a scholar, lawyer and litterateur, systematic in study and keen in the pursuit of all useful knowledge, despaired of the boy's future. "The youngster had not a vice or a fault that could spoil the man; but he had scarcely an inclination that promised success in the life his father had designed for him." It was not until his sixteenth year that he began to feel the deficiencies of his self-directed education and to apply himself vigorously to the work of overcoming them. He determined to study civil engineering, prompted no doubt by his fondness for geology, sketching and outdoor life. With that end in view he entered the University of Virginia where the elective courses of study appealed to him. "Here was the freedom of action he delighted in, and the boy in his sixteenth year, glad to avail himself of a happy exemption from arbitrary routine, went ardently at his appointed work." He made fair headway in Latin, Greek, French and mathematics. His memory in all things had the special character given to that faculty by intenseness of impression. He developed a wonderful aptitude for languages and his English was exceptional, as may be noted by a glance at his journals. He was also distinguished at the examinations which closed his first term at the university for his progress in chemistry, mineralogy and the other studies which at that time comprised the course in engineering.

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[1] The Bank of North America, chartered by Congress was organized upon Robert Morris' plans and controlled by his policy. "In the days of our deepest humiliation it restored credit, quickened commerce, supplied some measure of integrity and saved us from financial ruin." Philadelphia by Agnes Repplier, New York, 1898.

In the middle of his second term his studies were interrupted by a severe attack of acute rheumatic fever which was followed by a cardiac lesion from which he suffered during the remainder of his life. He was only eighteen but his physical condition made it advisable to bring his collegiate studies to an end. What the university could teach him for his especial use he had learned, and he never forgot it.

His cardiac impairment made the engineering profession impracticable. In the hope that he would be happier if he understood and could manage his own case, his friends and relatives recommended the study of medicine. Accordingly in his nineteenth year he entered the office of Dr. William Harris of Philadelphia and began to attend lectures at the University of Pennsylvania.

In October, 1840, Kane, although an undergraduate and not yet twenty-one years of age, was elected a resident physician in the Philadelphia Hospital (Blockley), and commenced his service the same month. Under the system then in operation he became junior to Dr. William M. McPheeters, later an eminent practitioner in St. Louis and for many years editor of the *St. Louis Medical and Surgical Journal*. Dr. McPheeters says of him:

> At that time his health was delicate and his appearance even puerile, notwithstanding he was within a few months of his majority. He was laboring under a serious organic affection of the heart—dilatation with valvular disease, which gave rise to a very loud bruit de soufflet, accompanied by the most tumultuous action of the heart from any violent exertion. He was unable to sleep in a horizontal position, but was under the necessity of having his head and shoulders elevated, almost to a right angle with his body. He was fully aware of the gravity of his disease, as he often remarked to me that he never closed his eyes at night in sleep without feeling conscious that he might die before morning; yet this consciousness did not seem to affect his spirits, or to check his enthusiasm. The habitual contemplation of a sudden death seemed not at all to affect the buoyancy of his spirits, or to abate the ardor with which he pursued the objects of his ambition. I have always thought that the uncertain state of his health had a good deal to do with his subsequent course of life, and the almost reckless exposure of himself to danger.
>
> At the time that he entered the hospital he had attended one course of lectures, and had been a good student; but, as a matter of course, he was little acquainted with the practical duties of the profession. This, however, he soon acquired in the discharge of his duties in the hospital, which were always performed with more than usual fidelity and earnestness. At first his extremely youthful appearance rather subjected him to a want of confidence on the part of the patients; but his dignity of character, great intelligence and fidelity soon overcame all obstacles of this kind, and he rapidly acquired the respect and confidence both of his associates and patients. I regarded him from the first as a young man of fine talents, of more than ordinary cultivation, and remarkably quick perception, accompanied with an ardent devotion to the pursuit of his profession. He was an habitual student, and took particular interest in the numerous post-mortem examinations made by myself and others, indeed, he manifested a great fondness for pathological investigations.

In the spring of 1841 Kane, still an undergraduate, became one of the four senior resident physicians who had general charge of the patients in the institution. To the heavy duties and responsibilities of his office were added the studies preliminary to his expected graduation and the writing of his inaugural thesis, a custom of the times.

It appears that in 1831, Dr. Nauche had communicated to the Society of Practical Medicine of Paris some observations upon a substance to which he gave the name kiesteine, sometimes found in the urine, and announced its presence there as infallibly indicating pregnancy. The importance of this discovery made it the subject of a critical examination in Europe, and at the request of Dr. Dunglison,[2] Drs. McPheeters and Perry, in the spring of 1840, instituted a series of experiments in the Blockley Hospital, the results of which they published in the *American Medical Intelligencer*[3] in March, 1841.

Kane as junior physician had studiously watched the investigation and when Dr. McPheeters left the hospital at the end of his internship, availing himself of McPheeters' apparatus and the insight gained in the preceding six months, "pushed the subject of kiesteine" as Dr. McPheeters said, "much farther than I had done, and wrote his inaugural thesis upon it, the publication of which gave him great celebrity."

This thesis appeared as the leading article in the *American Journal of the Medical Sciences* of July, 1842 and was entitled "Experiments on Kiesteine, with Observations on its Application to the Diagnosis of Pregnancy." In basing his conclusions on the observations of 271 cases, the writer states that "the kiesteine is not peculiar to pregnancy."[4]

Dr. Samuel Jackson,[5] professor of the institutes of medicine in the University of Pennsylvania, in his valedictory address

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[2] Dr. Robley Dunglison was born in Keswick, England in 1798. He received his medical education in Edinburgh, Paris and London, taking his surgical degree at the Royal College of Surgeons, London, 1819, and his medical degree at Erlangen in 1823. Early in life he established in London a reputation for learning and ability, having published a treatise on children's diseases and becoming editor of the *London Medical Repository* before he was twenty-six years of age.

At the invitation of Thomas Jefferson, he came to America in 1824 and became professor of anatomy, physiology, materia medica and pharmacy in the University of Virginia where he remained nine years. After serving as professor of materia medica and medical jurisprudence at the University of Maryland, he became professor of the institutes of medicine in Jefferson Medical College in Philadelphia, which appointment he held until 1868.

He was an able writer. His "Human Physiology," first printed in Boston in 1832, went through eight editions. His medical dictionary which first appeared in 1833, earned him a world-wide reputation: 55,000 copies were sold during his lifetime, and in 1897 it had reached the twenty-third edition. He produced a volume on hygiene and "The Practice of Medicine" in 1842, and "General Therapeutics and Materia Medica" in 1843. He founded and edited for five years the *American Medical Intelligencer* and was instrumental in the production of a dictionary for the blind. He died in Philadelphia, April 1, 1869.

[3] No trace of this report can be found in the Index catalogue of the Library of the Surgeon General's Office, U. S. Army.

[4] "If the urine," says Dr. Nauche, "be exposed for a few days in a glass, the kiesteine shows itself at the surface, in the form of specks and oblong filaments, which unite in a pellicle or scum of a line in thickness. A portion of this sinks to the bottom of the vessel, and there forms a whitish deposit of a milky appearance; the rest remains on the surface, adheres to the sides of the glass, and is converted into a solid membraniform substance."

[5] Dr. James Tyson has contributed the following delightful sketch of Dr. Samuel Jackson to Dr. Howard A. Kelly's "Cyclopedia of American Medical Biography": "He was born March 22, 1787, the year in which the College of Physicians, Philadelphia, was founded, and graduated from the medical department of the university in 1808, having received his college education also at the university. His thesis was on suspended animation. He was a student of Dr. Hutchinson, and after Dr. Hutchinson's death, of Dr. Wistar. He did not begin practice until about 1815, when he severed his connection with the drug business, of which he had assumed charge in 1809 on the death of his brother. He rapidly became prominent and in 1820 when the yellow fever prevailed in Philadelphia he was chairman of the Board of Health. He rendered signal service not only fighting the disease fearlessly and valiantly, but publishing important papers in the *Philadelphia Journal of Medical and Physical Sciences*. He had an attack of the fever and regarded it of local origin, due to filth and putrescent animal and vegetable matter.

His writings, chiefly opening lectures at the university and biographies of colleagues, occupy some two columns in the catalogue of the Surgeon-to the graduating class of that institution on March 28, 1857 said:

> It is fifteen years and two days, to the hour, when Elisha Kent Kane stood on this platform in this room, and received the medical diploma of the University. However sanguine may have been his anticipations of professional success and reputation (and it is a fair presumption that such were entertained by him), he was fully justified in that expectancy. He was the foremost student of the class; the thesis he had presented to the faculty had been honored by a vote of approbation and a request for its publication. In this treatise, a subject that had recently been brought to the notice of the profession by Nauche, and was still a matter of controversy, was investigated and permanently settled. The conclusions of Dr. Kane were drawn from a series of experiments and observations on one hundred and seventy-nine individuals, and have been entirely acquiesced in. The subject has remained undisturbed in the position in which his publication placed it. This, his first step in medicine, made his name an authority on that question that time has not weakened; it established a reputation that has not been dimmed, and was an augury of professional preeminence.

Dr. Elisha Kent Kane received his degree from the University of Pennsylvania in the spring of 1842 and the following year his father prevailed upon him to enter the Navy. He was appointed an assistant surgeon but as there were no vacancies in that grade at that time and he could therefore receive no pay from the Navy, it was arranged with the Secretary of the Navy that he might accept an appointment as physician to a diplomatic mission about to depart for China, "without prejudice to his rank in the service."[6]

General's Library at Washington. His best work was his "Principles of Medicine Founded on the Structure and Functions of the Animal Organism" (1832), the first of its kind published in America.

Jackson was seventy-six years of age when he delivered his last course of lectures at the university in the session of 1862–63, which I attended. He had the appearance then of being a very old man, older than he seems in the bronze tablet which we in 1910 erected to his memory in our university. He was so feeble that he leaned on the arm of an assistant as he walked to his desk, whence he delivered his lectures sitting. There was, however, no lack of spirit in his message. With his bright eyes beaming, his face full of enthusiasm, and his white hair streaming over his shoulders, he was truly picturesque. Leaning forward, he narrated with great animation the happenings of the day in physiology as they appeared to the eyes of the great French physiologists, Claude Bernard, Milne-Edwards and Brown-Séquard. For at that day the French were the acknowledged leaders in physiological science.

He became professor of materia medica in the College of Pharmacy in 1828 as the colleague of Prof. George B. Wood. Jackson's introduction to medical teaching was in the Philadelphia Hospital, in whose wards he served from 1822 to 1845, and attracted many students to his lectures. At that day the subjects of practice of medicine and the institutes of medicine were united under one professorship. Institutes of medicine was a term which in its broadest significance covered almost the entire subject of medicine except anatomy, surgery and materia medica, but practically was a synonym for physiology. In 1827 Dr. Nathaniel Chapman was the professor of practice and institutes, but finding the subject too extensive, Jackson was appointed assistant and delivered the course on institutes. In 1835 a chair of institutes was established and Jackson elected to it, resigning in 1863 after twenty-eight years' incumbency. He died April 4, 1872, nine years after his resignation, aged eighty-two years."

[6] These words were the cause of a misunderstanding which later was a source of great annoyance to Dr. Kane as is evident in the following letters:

> Sir:
>
> I was led some time since to present to your Department a claim for Sea Service, based upon my position on board the United States Frigate Brandywine, in attendance upon the American Legation to China. This claim not being acknowledged, I left a shore station at the Philadelphia Navy Yard, and entered upon active duty in the present African Squadron, under Commodore Geo. C. Read.
>
> An attack of African Fever, engendered during duty, compelled my return after a Service of but eleven months, and I now, with depressed health and energies, view the approaching examination of my date without being eligible to a participation therein.
>
> Under these circumstances, with the concurrence of the Chief of the Bureau of Medicine and Surgery, I am led to make a personal application for such an acknowledgment of Service as may enable me to take place with the fellow members of my date in the ensuing examination for Assistant Surgeons.
>
> Very respectfully and faithfully,
> Your Obdt. Servt.
> E. K. Kane, Asst. Surgn.
> Washington, June 18th, '47.

Accordingly in May, 1843, he sailed in the frigate Brandywine, Commodore Parker, for the China coast. The vessel after touching at Madeira proceeded to Rio de Janeiro. While in port Dr. Kane availed himself of an opportunity to journey inland as far as the base of the Andes. Some very brief memoranda of this Brazilian trip were transcribed in letters to his friends in Philadelphia but the journal of the cruise with all his sketches of interesting objects and scenery was lost on the Nile on his journey home and he never had the leisure to rewrite the record from memory. The loss of the journal of this cruise deprives the historian of much of the detail of this voyage. Dr. Kane's notes were particularly accurate and his observations on what were then unfamiliar scenes would make interesting reading today.

Dr. Elder in his life of Kane says:

> He always took his notes upon the spot, and when he published them afterward his books were scarcely anything but his journals emptied into type. His writings that have charmed the world are . . . his books of original entry. There are several instances, in his three volumes of Arctic Explorations, where his notes seemed to him of questionable accuracy, but a rigid observance of a good rule restrained correction by his memory, and he put them down as they were written. He had a conscience in literary composition, and a habitual respect for the difference between the litera scripta and the vestiges of memory in the statement of facts.

From Rio the Brandywine went to Bombay. During the long voyage around the Cape of Good Hope, the doctor occupied his leisure with the study of geometry, algebra, navigation and modern languages. The vessel was delayed at Bombay for several months during which time Dr. Kane visited the neighboring points of interest and was so fortunate as to participate in a big game hunt in Ceylon. After a tedious voyage from India, the ship finally reached the port of Macao which was to be the headquarters of the American ambassador to China. Dr. Kane remained connected with the diplomatic party and cared for the sick of the Brandywine until negotiations were closed by the signing of a treaty on July 3, 1844. Although acting as medical officer of the Brandywine it must be remembered that he was not attached to the vessel as a medical officer of the Navy but as physician to the mission. His status as such enabled him to leave the vessel and visit the island of Luzon in the Philippines. That he had intended to avail himself of all the opportunities of the cruise, is indicated by his precaution

To the
Hon'ble John Y. Mason,
Secretary of the Navy.

Navy Department,
Bureau of Medicine and Surgery,
June 19, 1847

Sir:

In reference to the case of Dr. Kane, set forth in his letter to you of the 18th instant, and referred to this Bureau for opinion, I have the honor to state, that he supposed himself on recognized duty during the period of his absence, and in accordance with this supposition, officiated on board the U. S. Frigate Brandywine, and at Macao, for a period extending from the 20th of May, 1843, to the 21st of July, 1844. This duty was performed under an obnoxious climate, and was accompanied with a peculiar augmentation of personal expenditure, for which, including disbursements of a strictly professional character, he has received no pecuniary remuneration.

After his return home, he sought active duty on board the frigate United States, during her cruise on the Coast of Africa, and was only prevented from there completing his term of service of two years by sickness engendered in the course of duty.

From the date of Dr. Kane's commission, July 11, 1843, up to the present moment, he has seen but nine months' service on shore, of which nine, seven were on active duty at the Philadelphia Navy Yard.

Dr. Kane's letter is herewith returned.

I have the honor to be
Very respectfully,
Thos. Harris.

Hon. J. Y. Mason,
Secretary of the Navy.

Upon the back of this letter is the following endorsement:

> The rule is wise, and ought to be enforced. Its object is to secure the familiarity with duty at sea, with professional duty, before an assistant surgeon can be examined, with a view to promotion. As a general rule, this experience must be acquired in regular sea service. The circumstances of Dr. Kane's case are very peculiar, and he has been placed in a situation, to acquire the experience required. The Regulation may therefore be relaxed in his case.
>
> J. Y. M.

to secure many letters of introduction to influential personages in the Orient. During his sojourn in the Philippines he explored the volcano of Taal, located on an island in Lake Bombon in the Batangas province about forty miles south of Manila. Regarding this exploit Dr. Elder says:

> His descent into the Taal was a feat which only one European had attempted before, and he without success. Dr. Kane was in company with Baron Loë, a relative of Prince Metternich.[7] They had an escort of natives, provided by the ecclesiastics of the neighboring sanctuary of Casaisay, who pointed out the only pathway to the brink of the crater. The two gentlemen attempted the descent together, but they soon reached a projecting ledge, from which farther progress was absolutely precipitous. After searching in vain for some more practicable route, the baron gave up the project, and united with the rest of the party in efforts to persuade the doctor to abandon it also. But that was out of the question. It was his temper to meet difficulty with proportioned endeavor, and to do his best to master it before he yielded. The attendants very reluctantly gathered from the jungle a parcel of bamboos, and fastened them into a rude but strong rope, by which, under the guidance of the baron, they lowered him over the brink. He touched bottom at a depth of more than two hundred feet from the platform he had left, and, detaching himself from the cord, clambered slowly downward till he reached the smoking lake below and dipped his specimen-bottles under its surface.
>
> The next thing in order was to get back again with the trophies of his achievement. This he used to speak of as the only dangerous part of the enterprise. The scalding ashes gave way under him at every step of his return; a change in the air-current stifled him with sulphurous vapors; he fell repeatedly, and, before he got back to the spot where his rope was dangling, his boots were so charred that one of them went to pieces on his foot. He, however, succeeded in tying the bamboo round his waist, and was hauled up almost insensible. When he sank exhausted in the hands of his assistants, the natives protested that the deity of the Taal had avenged himself for the sacrilege; but the baron, who had less faith in the divinity of brimstone, dashed him with water, and applied restoratives brought by a messenger whom he had dispatched to the neighboring hermitage. The remedies were so far successful that he could be carried to the halting-place of the night before. He had saved his bottles of sulphur-

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[7] Prince Metternich, an Austrian statesman, was born in Coblenz, May 15, 1773, and died in Vienna, June 11, 1859. He was educated at Strassburg, when only seventeen represented the Westphalian princes at the coronation of Leopold II, settled in Vienna in 1794, and assured himself a place in diplomacy by marrying the grand-daughter of the Austrian chancellor, Kaunitz, in 1795. This marriage not only gave him entry to the best society but brought wealth, and at the Congress of Rastatt, representing the Westphalian collegium, he served his apprenticeship in politics. In 1801 he was sent to Dresden by Austria and two years later to Berlin where a part of his mission was to cultivate the friendship of the French ambassador. He did this so well that that official induced Napoleon to suggest to Austria that Metternich would be a most acceptable representative at the Tuileries; and so in 1806 he was sent to Paris, where he ingratiated himself with Caroline Murat, sister of Napoleon, and with Talleyrand. On the outbreak of the war between France and Austria, Metternich was put to much personal inconvenience by Napoleon, who forcibly detained him for some time. Thereafter he entered eagerly into the anti-Napoleonic league, assisted in the formation of the quadruple alliance, and as Germany proved successful, took no part in the national sentiment which arose but directed himself solely to the aggrandizement of Austria, hence doing his best to preserve the French boundaries as they had been and to render Austria the only gainer among the powers by the reapportionment of Europe. He is credited with having planned and brought about the marriage of Napoleon and Maria Louisa. In the years that followed he carried things his own way in Austria, planned the Holy Alliance and was extremely reactionary in his internal and foreign policies. In the difficult times of Napoleon's supremacy and fall Metternich guided Austrian policies with a masterly hand. As a diplomatist he was the equal of any of his time. In 1814 he visited England and formed the quadruple alliance. He was the master spirit at the Congress of Vienna and for fifteen years thereafter was the leading statesman of Europe. The revolution of 1830 in France showed the ill-success of his program and the rising of 1848 and the insurrection in Vienna itself made it necessary for the Emperor Ferdinand to demand his resignation. Even then by his frequent counsel he retained a marked influence in European politics.

> water, which he sent home to be analyzed, and with them some fine specimens of porphyritic tufa.
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> But this was not quite the end of the adventure. As his companion and himself pursued their journeying, the story of the profanation to which the Taal had been subjected went before them. A pygmy mob gathered angrily around them, their escort dwindled away or took part with their assailants, and, before they were rescued by some of the padres, the gentlemen were forced to entrench themselves in a thicket and throw up a dust with their revolvers.

In a long letter, dated Whampoa, August 6, 1844, Dr. Kane gives a description of the negotiations concerning the treaty. According to Dr. Elder, "there is nothing in any published page of his that is richer in all the qualities of his style, nothing more graphic in description, more pictorial in presentment, than this long letter. Chinese ceremony, costume, architecture, furniture, mandarins, the crowds in the streets are rendered as if Retzsch[8] had sketched and Diedrich Knickerbocker[9] written them." Unfortunately space will not permit the inclusion of extracts from this letter in our sketch.

The following extract from a letter written by Mr. Fletcher Webster, the secretary of the mission serves to show Dr. Kane's reputation at twenty-four:

> Highly accomplished as a physician and surgeon, he seemed to think very lightly of his acquirements in the profession, and to be continually looking forward to something beyond.
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> He was very fond of the exact sciences, and was an indefatigable student, evidently annoyed when not engaged in something and always restless unless busy, for hours in his stateroom buried in mathematics, and then next seen at the masthead or over the vessel's side.
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> On our reaching Macao, Dr. K. and the rest of us established ourselves on shore; and, while waiting the slow proceedings of the Chinese authorities, he made flying visits to Hong-Kong and Canton, returned to examine the environs of Macao and the islands in the harbor, excursions always attended with a good deal of personal danger, and had explored the whole town itself before we, of slower motions, had commenced. . . .
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> He remained but a short time with us at Macao, but on leave of absence went to Luconia [Luzon]. He landed at Manila, and thence proceeded entirely across the island to the shores of the Pacific, saw all its greatest curiosities, and on his return to Macao, established himself as a physician at Whampoa Reach, in the Canton River, where he soon acquired an extensive practice among the shipping which usually lies there in great numbers. When I left Macao, in August, 1844, he was still there . . .
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> Dr. Kane was a person of very nice modesty, not given to much talking, and not eminently social, that is, as I found him. In social intercourse, although agreeable and very bright when called out, he still seemed to be thinking of something above and beyond what was present.
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> To his great scientific taste and knowledge, and his energy and resolution, he added a courage of the most dauntless kind. The idea of personal apprehension seemed never to cross his mind. He was ambitious, not of mere personal distinction, but of achievements useful to mankind and promotive of science.

The diplomatic negotiations terminated, the Brandywine[10] left Macao homeward bound in August, 1844. Dr. Kane not intending to return with the vessel resigned his office as physician to the legation and

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[8] Moritz Retzsch was a German artist born at Dresden, December 9, 1779. He died in a small town near Dresden in 1857. His works display great beauty in drawing and color. He is most noted for his illustrations found in the early editions of Goethe's Faust and the works of Schiller and Bürger. He executed a series of eighty Shakespearean drawings which are distinguished by exquisite delicacy and refinement of form and expression. He was for some years a professor in the Art Academy at Dresden.

[9] Washington Irving.

[10] The U. S. S. Brandywine was a frigate of 1726 tons, carrying 50 forty-four-pounders and a crew of 480 men. This vessel was built at the Washington Navy Yard during the years from 1821 to 1825 at a cost of $400,000. The length of the ship was 175 feet, the beam 45 feet and the draft 22 feet.

In 1825–26 she was attached to the Mediterranean squadron and was the vessel which carried General Lafayette back to France after his visit to the United States. During the three following years the Brandywine was the flagship of Commodore Jacob Jones was even meditating a resignation from the Navy in which it will be remembered he was unpaid and still awaiting a vacancy to occur in the grade of assistant surgeon. Apparently he intended to practice medicine in China until he could accumulate sufficient funds for extensive travel in the East but while engaged in practice at Whampoa Dr. Kane suffered a serious illness which broke up his professional plans and resulted in his departure for home.

In company with Mr. Dent, the son of a British official, he left China in January, 1845 and visited Singapore, Borneo and Sumatra. Some months were spent in a tour of exploration through the interior of India and in the region of the Himalaya Mountains. It appears that Prince Dwakanoth Tagore, one of the wealthiest of the native nobles of Calcutta, who belonged to a family distinguished for many generations throughout India and represented today by the illustrious Hindu poet, Sir Rabindranath Tagore, was preparing to visit England and invited Dr. Kane to become a member of his suite. The interval preceding the departure of the party was spent by Dr. Kane in visiting historic localities in India. He had every facility that the ample means of the prince could supply but unfortunately we have no record of his Indian wanderings.

The party journeyed slowly across Persia and Syria to Alexandria where Dr. Kane left the services of the prince in order to visit the regions of the Upper Nile.

A letter to his father dated at Thebes, May 2, 1845, contains all the memoranda of his Egyptian tour which we possess. He wrote:

> I have been for some days wandering about in a state of amazement, unable profitably to see anything. Perhaps it may to you seem an absurdity; but there is something so vast in the dimensions of these colossal ruins that I cannot embrace details; and indeed, I almost fear that I shall leave Thebes without a definite impression of anything but magnitude.
>
> My paper is resting upon the enormous foot of one of the Osiride columns in the Memnonium; my breakfast, yet awaiting me, is on the other. Forty-eight columns are behind me, grouped around my bed; and the roof which they support throws its shadow upon this respectable epistle. I have taken lodgings in the palace-temple of Sesostris.
>
> Thanks to Dwakanoth Tagore and the very meagre influence of my China title, I have been elected a member of the Egyptian society, a somewhat dubious honor, which has converted my boat into a library, and condemned me to a fee of two pounds six. It has, however, enabled me to wade through the complicated trash of such men as Stevens, and to read, with the country itself for my atlas, the noble labors of Cailliaud[11] and Wilkinson.[12]
>
> This is very delightful for a sight-seer, but very mortifying to an ignorant man like myself, for my boundary is fixed and limited as my own

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in the Pacific. The year 1830 was spent in the Gulf of Mexico. From 1831 to 1833 the ship was again in the Mediterranean. Commodore A. S. Wadsworth used her as flagship in the Pacific from 1834 to 1837. After some years' service in the Mediterranean, the vessel became the flagship of Commodore F. A. Parker in the East Indies from 1843 to 1845. The years 1847 to 1850 saw her with the Brazilian squadron as the flagship of Commodore C. W. Storer. The Brandywine was accidentally destroyed by fire in 1865 while used as a storeship at the Norfolk Navy Yard.

[11] Frédéric Cailliaud, a noted French traveler, was born at Nantes, June 9, 1787 and died there in 1869. While examining the mineral resources of Egypt he rediscovered the ancient emerald mines of Jebel Zobara near the Red Sea and his report of a journey to Sirvah led to the annexation of that region by Egypt in 1820. In 1821 he accompanied Ibrahim Pasha's expedition to the White Nile, and his "Voyage à Méroë" contained the first reliable information of that district. On a mummy found by him a Greek translation was added to the usual hieroglyphic inscription. These Greek words aided Champollion in his researches in the ancient Egyptian language. In 1827 he became curator of the Natural History museum at Nantes.

[12] Sir John Gardner Wilkinson, an English archaeologist, was born in Westmoreland in 1797 and died in Carmarthenshire, Wales, in 1875. He lived for some years in Egypt making a study of the ancient monuments of the country. His "Manners and Customs of the Ancient Egyptians," published in 1841 still remains a standard authority on all that relates to Egyptian art. He made a large collection of Egyptian antiquities most of which is now in the British museum.

information. Nothing can be more exciting than the intelligent study of Egyptian antiquities.

Since Champollion[13] gave tongues to stones, by clothing these wonderful remains with the interest of a recorded history, Egypt has undergone a complete revolution. It is no longer a place for sage Mr. Oldbuck and ingenious gentlemen of the Bill Stumps class. It is nothing more

[13] Jean François Champollion, a French Egyptologist was born in Figeac, France, December 23, 1791 and died in Paris in March, 1832. At an early age he developed a phenomenal aptitude for languages. When a schoolboy at Grenoble he made himself familiar with Latin, Greek, Hebrew, Chaldean, Arabic and Syrian. At the age of thirteen before the prefect of the department of Isere he explained a chapter of Genesis in the Hebrew text much to the amazement of all present. A few years later Egypt attracted him. "I want to make a profound and continuous study of this ancient nation," he wrote. "The enthusiasm into which the description of their enormous monuments has thrown me, the admiration with which their power and their knowledge have filled me, grow steadily as I acquire new ideas. Of all the peoples whom I love best, I assure you that none occupies the place of the Egyptians in my heart."

Unfortunately the key to the fabulous history of Egypt, which loses itself in the millennial night of time, seemed to be lost forever. No one had yet succeeded in deciphering the inscriptions that ornamented the temples, the tombs and the obelisks. All those who thought they had deciphered the alphabet of the hieroglyphs had ended in miserable error. The Englishman, Young, the Swede, Akerblad, the German, Guntherwahl, the Dane, Zoega, had all made the attempt and had accomplished nothing. The French scientists who had gone with Bonaparte on the Egyptian expedition had brought back precious copies of the inscriptions without being able to read them. The old land of the Pharaohs had remained intact, and its Sphinx, set up in the midst of the desert, was no idle symbol. What new Oedipus was there to unravel the enigma?

"There was Champollion," writes Emile Henriot in *L'Europe Nouvelle*. "To reach the heart of ancient Egypt he attacked it on every side. He studied the history of the neighboring people. He learned their language, and those languages which might have come down as daughters from the ancient Egyptian, such as Ethiopian and Coptic; and he compared them with Arabic and Hebrew. In order to make himself familiar with Coptic, the dialect of the modern Egyptian, he translated everything he had read and everything he had learned into it, until one day he was surprised to find that he was talking Coptic to himself. He had left Grenoble for Paris, where he plunged into such a frenzy for knowledge that he never felt his misery or his sad and solitary life. He had no resources save the little money that his brother sent him, one hundred francs a month, with which he had to provide himself with everything, lodging, food, society and books. He was 'poor as a poet,' but like a poet faith dwelled in him and upheld him. He devoted his time between the Collège de France, studying Oriental languages, and libraries. 'The study of Zend and of Pehlevi,' he said, 'win me some happy moments. I have the satisfaction of being able to read things that nobody else knows about, not even the name.' He felt himself irresistibly drawn 'into difficult paths bristling with obstacles that perpetually renew themselves. 'Such is my destiny; I must undergo it whatever the cost.'

Finally came success. At nineteen he was named professor of history on the *faculté des lettres de Grenoble*, and also custodian of the city library. Little by little, by dint of perseverance, intelligence, knowledge and determination, he began to unwrap the old mummy that had slumbered in its grave for two thousand years.

"One can hardly think, to be sure, of giving an explanation here of the complicated mysteries of old Egyptian writing, or even stating with any degree of exactness the almost insurmountable problem that Champollion had to solve. But however much a layman one may be in matters of linguistics and Egyptology, it is impossible not to admire the amazing success of the first man to read the hieroglyphics. Confronted with the celebrated Rosetta Stone, over whose inscription all the scholars of the world had worked for more than twenty years, Champollion made up his mind that this inscription, in three alphabets, Greek, demotic, and hieroglyphic, must under these three aspects reproduce a single text, and that one who could discover the latter would find here the interpreter that would enable him to understand all the rest. The Greek inscription proved to be a decree of the Egyptian priests in honor of Ptolemy Epiphanes. This decree included numerous proper names and that of Ptolemy several times. Now the hieroglyphics also showed several groups of signs in little frames and these too were repeated several times. Could this be the name of Ptolemy? If it were, every hieroglyphic sign in the name was also an alphabetic symbol. This is what Champollion assumed, and with the different symbols that made up the name of Ptolemy he got a start on the alphabet. Unfortunately, in order to achieve definite proof, he would have to check by other names the identity of the first signs that he obtained, and the Rosetta Stone was broken in such a way that to do this was impossible. But another double inscription in Greek and in hieroglyphics had nor less than a great library of monumental history, where all that is wanted is the patient labor of a reader.

You will be glad to hear that I have had a corresponding acquaintance (now a personal one) with Professor Lepsius,[14] of Berlin and Rome . . . I met him, seated cross-legged in the great temple of Karnak, supping coffee and copying hieroglyphics. He is at the head of the great Prussian commission; and it gratified me not a little, during our long talks, to find that he knew the Recording Secretary of the American Philosophical Society; and it required a very tolerable strain of my tolerably plastic countenance to sustain myself in the scientific position which, by reflection or inheritance, I was supposed to occupy.

I dare say that Mr. Gliddon[15] has crammed you sufficiently to make my own literal descriptions useless; or, if he has not, I yield me to mosquitos and this awful khamsin, and spare my imagination. As, however, my portfolio contains but two sheets of paper, and as I have determined to fill them both, I deliver my brain by an easy labor, giving you, as I had it repeated in frequent conversations, the outline of the labors of the great Prussian commission.

An exact report of the expedition of Lepsius and his suite, with their labors, journeyings, and dates from July, 1842 till the date of this letter, follows: It is filled with valuable information which was news at that time, but it is replaced now by the publications of this greatest of all the Egyptologists, in works familiar to all the students of archaeology.

Mingled with the narrative of the journeyings of the commission, Dr. Elder informs us that the doctor gives an occasional intimation of his own.

Lepsius left the Fayoum (a most interesting region, which I entered at Benisouef) . . . passed through the great (Nubian) desert to Abou Ahmed and Berber, a journey of twelve days, with fifty-two camels . . . Accompanied by his chaplain, he ascended the Blue Nile, the scene of poor Bruce's[16] toil, as far as Seso, in 13° north latitude, and rejoined his expedition on the 5th April, '45, at the pyramids of Méröe.

been discovered at Pilae, where Ptolemy and Cleopatra were named in groups of letters in little frames just like those that appeared on the Rosetta Stone. The study of these enabled Champollion to show the agreement of certain letters in these two names. This gave half of the hieroglyphic alphabet. Other names in little frames proved the rest. This is the great discovery of Jean-François Champollion. It revealed to humanity thirty centuries of history."

This discovery he announced at a session of the Académie des Inscriptions et Belles Lettres in 1823. It was published in 1824, at the expense of the state, under the title of "Précis du système hiéroglyphique des anciens Egyptiens." In 1824 he went to Italy, and investigated the collections of papyri and other Egyptian antiquities in the principal Italian cities. In 1826 Charles x appointed him to superintend the new department of Egyptian antiquities in the museum of the Louvre. In 1831 the chair of Egyptian archaeology was created for him in the Collège de France.

[14] Karl Richard Lepsius, a German Egyptologist, was born in Naumburg, December 23, 1810 and died in Berlin in 1884. After studying philology at Leipzig, Göttingen and Berlin, he removed to Paris and later to Rome. Subsequently he went to London and in collaboration with Bunsen projected a large work on ancient Egypt. He began his researches in 1842 and spent three years exploring in Egypt from the Sudan north of Khartum to the coast of Syria, obtaining an enormous amount of data. His life henceforth was that of an ardent Egyptologist and honors were showered upon him. In 1866 another visit to Egypt resulted in his famed discovery of the Decree of Towis, or Table of Canopus which, like the inscription that enabled Champollion to ravel the hitherto impenetrable mystery of the hieroglyphics, was inscribed in hieroglyphic, the popular tongue and Greek.

[15] George Robbins Gliddon, an American archaeologist, was born in England in 1809 and died in Panama in 1857. He was at one time United States consul in Alexandria and for many years was engaged in archaeological research in Egypt and the Levant. Returning to the United States he lectured in many cities on Oriental archaeology and wrote extensively on the subject.

[16] James Bruce, a Scottish traveler, was born in Kinnaird House, Stirlingshire, December 14, 1730. He became a wine merchant, but on the death of his young wife in 1754, he took up the study of languages. While traveling in Spain an examination of oriental mss. at the Escurial led him to the study of Arabic and Geez and determined his future career. He became British consul at Algiers in 1762 with a commission to study the ancient ruins in that country. In 1768 he arrived at Alexandria, having resolved

My own journeying in the desert was not nearly so extended,[17] and if, as I am nearly determined upon, I make my détour from Esneh (Upper Egypt) to the oasis-wells and Abydos, this poor, scabby, sun-burnt economist will ride on top of a water-skin, with a retinue of two dromedaries instead of fifty-two.

From this moment [the professor's return from the Blue Nile] he rested, or rather labored, at Thebes: the great temple of Karnak became his lodging-house, and Joseph's sanctuary his kitchen; and here, dear father, I, supping coffee in the temple of Sesostris, would scribble notes to my Karnak friend on the other side of the river, or pay running visits to a couple of Germans who lodged up the hill in an excavated tomb.

My Thebes life is a very wild one: I am in native dress, with a beard so long that I have to tuck it in. My lodging is on the hot ground, and I walk on an average of twenty-six miles a day. Cartilaginous pigeons, delicious young squabs, form the basis of a meal or series of meals, which, numbering five per diem, commence at four A.M. and end at nine in the evening, coffee being the great diluent, tea without sugar.

One of the most remarkable discoveries is, as to the physical conformation of the old mother-river's capacious offspring, the valley of the Nile. Mention this to Mr. Rogers, unless his correspondence may have preceded you. Lepsius paid particular attention to some hieroglyphic inscriptions on the rocks at the narrow defile of Semna; for, in a country as old as this, antiquity is engraved upon antiquity, and the scribbling inscriptions of travellers often give information of the highest value. He saw here the highest rise of the Nile, at that place, during eighteen different years under the government of Menes and his successors, from which we learn that nearly two thousand two hundred years before Christ, or four thousand and forty-five years ago, the average level of the Nile at that place was twenty-two feet higher than at present; while below the first cataract at Silsilis, as appears from the grottoes in the rocks, the level of the river was at least three feet, and probably more, below its present condition.

This struck me as especially curious, for my own observations at Manfalout (lat. 27° N.) and the excellent conclusions drawn from the great Colossi of Thebes, prove with almost absolute certainty that the Valley of the Nile at Luxor is nearly seven feet higher than at the date of their construction. . .

The changes which have occurred in this belt are of the highest interest; for, after all, whether it be the coast-line of the Delta, or the beautiful Fayoum, or the narrow strip which leaves bygone cities crumbling in the encroaching sands, the source is the same; the great mother scatters her blessings and her curses at each inundation, and a fixed rate of increase or decrease would be of practical importance almost beyond calculation.

Your society will be the gainer if I succeed in passing my collection at Alexandria. I have two royal ovals in colors as fresh as my Chinese miniatures; and yet their groundwork is the limestone wall of an excavated sepulchre, and the artist some Pharaonic worthy of three thousand years' antiquity. The statue trunk, coming, as it does, from Tel-el-Amarna, will be of great interest.

The accident by which his journals and baggage were lost was related thus:

I wrote from Gizneh by special messenger, informing you of the melancholy loss of my baggage. Sympathize with this poor, very poor, devil, who, alone in a sandy desert, rejoices

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to endeavor to discover the source of the Nile, which he believed to rise in Abyssinia. Making the difficult journey to Abyssinia he remained there two years, gaining knowledge which enabled him subsequently to present a perfect picture of Abyssinian life at that time. On November 14, 1770, he reached the long-sought source of the Blue Nile. Setting out from Gondar the capital of Abyssinia at that time, in December, 1771, Bruce made his way to Nubia, being the first to trace the Blue Nile to its confluence with the White Nile. He returned to London in 1774 but offended by the incredulity with which his story was received, he retired to his home in Scotland. It as not until 1790 that, urged by his friends, he published his "Travels to Discover the Sources of the Nile in the Years 1768–73," in five octavo volumes, lavishly illustrated. The work was very popular, but it was assailed by other travelers as being unworthy of credence. The truth of his descriptions, however, has been amply confirmed by men who have visited the same region. He died at his ancestral home, Kinnaird House on April 27, 1794.

[17] Yet he elsewhere said that he had "eaten locusts in Sennaar," as far south as Lepsius had travelled.

in three shirts, a pair of slippers, and a boat-cloak. I rehearse in duplicate its details.

Dendera is but six miles from the ancient Tentyris, a pleasant walk, which intending to enjoy before the sun heated the sands, induced me to bivouac on a slope of the river-bank, in order to start in the small hours of the morning. Preparatory to a house-cleaning during my absence, I drew the boat upon the land-slope, and then, as was my custom, placed my baggage on a platform of boards, one end of which rested on the shore, the other, dry and comfortable, on the gunwale of the boat.

My pilot laid his huge carcass over this little isthmus of household goods; and your son, cloaked and carpeted, went to sleep upon the sands. In the morning (Lord help me!) I was the first to rise; but boat, platform, baggage, all was gone. Nothing met my eyes but sleeping boatmen, naked wind-drifts and complete desolation.

I cannot fill up an old woman's letter, of the how and the why and the when, how I felt and what I did. All that I can say is that my boat was recovered two miles down the stream, and that, as far as my mystified senses can account for the affair, the rapid current, aided by a partial quicksand, undermined my boat, tilted the side weighed down by my trunks, noiselessly canted them into the stream, and then, relieved of the weight, floated silently away.

I am heart-sick at this loss. Nothing in the great scale of ups and downs which I have experienced, you would say; but most depressing in its consequences. Only one thing remains to comfort me; . . . by a little foresight, I had previously sent to England my best clothes and, thank Heaven: my diplomas. But still my list of losses is more than enough to try my well-tried purse and better-tried philosophy.

The idle hours of the sleepy Nile I had devoted to the arrangement of my collection, papers, &c. They are all gone: even Dr. Morton's[18] skulls have sunk in the quicksands. One thing more (it ends my story: how shall I say it!) I have lost my watch. Remaining are dear mother's battered writing-desk, containing my business correspondence and my money, my legation sword, valued for old associations, and a carpet-bag of shirts. No jackets, no boots, and no pantaloons.

Whether this was the true, or, at least, the whole explanation of his loss, he had afterward good reason to doubt. Some days after it occurred, as he was landing from his boat, borne through the water on the shoulders of his interpreter, he caught a glimpse of his watch chain suspended round the fellow's neck, and he succeeded, after a severe tussle and a good ducking, in recovering a part of the chain, and with it the watch itself. The rascal made his escape with the rest of his plunder, which most probably amounted to all that he coveted of the swamped cargo.

Before this he had been wounded in the leg in a mêlée with a party of Bedouins who attempted to rob him, and was glad on his arrival at Alexandria to put himself under surgical treatment. But a new visitation awaited him here. He had an attack of the plague and during his illness, which nearly cost him his life, the collections which he had made and sent down the river from time to time on his occasional opportunities, were dissipated and lost.

As soon as he had recovered from his illness Dr. Kane set out for Greece in company with an officer of the British army. He made the tour of Greece on foot, finally taking a steamer from Patras for Trieste. Germany and Switzerland lay before him. He traveled through both countries and in the latter so carefully examined the glaciers of the Alps that his ice theories of the Arctic are enriched with frequent and critical allusions to them.

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[18] Dr. Samuel G. Morton was born in Philadelphia in 1799. He attended lectures at the University of Pennsylvania and took his degree there in 1820. Following his graduation he went to Edinburgh to continue his medical studies. In 1824 he returned to Philadelphia and began to practice medicine. Soon after establishing himself in the city he was made associate in anatomy at the University of Pennsylvania and lectured upon that subject until 1836. It was when he began his career as a teacher of anatomy that he received the stimulus that led to the work on which his lasting reputation rests. In a letter written to J. R. Bartlett he states that "having had occasion, in the summer of 1830, to deliver an introductory lecture to a course of anatomy, I chose for my subject 'the different forms ot the skull as exhibited in the five races of men.' Strange to say I could neither buy nor borrow a cranium of each of these races, and I finished my discourse without showing either the Mongolian or the Malay. Forcibly

On July 13, 1845 he was in Paris. Six months had been spent in travel since he left Macao. It appears that at this time he was intent upon obtaining a license from the Spanish authorities to practice medicine at Manila. He had made $3,000 by his practice in China and thought to gain sufficient cash by the practice of his profession in the Philippines for a tour of the world.

The Spanish authorities failing him, he went to Italy and returned through France to England and from England home to Philadelphia. With a view to practicing medicine he rented a house in Walnut Street, and furnished an office in it with taste and elaborate care.

It must be remembered that, although he had now been a titular assistant surgeon of the United States Navy for nearly four years, he had not been commissioned and put upon the payroll. He had a decided repugnance for the service. From his first cruise to the end of his voyaging he was always seasick in rough weather. He hated the routine of naval life as it existed at that time.

His prospects in Philadelphia were excellent. He had been offered an appointment as lecturer in the University of Pennsylvania. His family urged him to resign from the Navy. He refused, however, to do so, for at this time the Mexican war seemed not far off and Dr. Kane insisted it would not be honorable for him to leave the Navy with hostilities impending. He made a request for active duty, was placed on waiting orders, and began to receive patients in his Walnut Street office.

Three weeks before the declaration of war with Mexico, Dr. Kane was ordered to the coast of Africa as junior medical officer

impressed with this great deficiency in a most important branch of science, I at once resolved to make a collection for myself." Although most of the skulls belonging to his collection were contributed by some hundred friends, the cost of collecting to Morton must have been between $10,000 and $15,000. Agassiz, on visiting Philadelphia soon after his arrival in America, wrote that "Dr. Morton's unique collection of human skulls is also to be found in Philadelphia. Imagine a series of six hundred skulls, mostly Indian, of all the tribes who now inhabit or formerly inhabited America. Nothing like it exists elsewhere. This collection alone is worth a journey to America."

The two most important works by Morton based on his splendid collection of skulls are "Crania Americana" and "Crania Aegyptica," the first published in 1839.

He wrote to Gliddon regarding the collection of skulls in Egypt: "You will observe by the annexed prospectus that I engaged in a work of considerable novelty, and which, as regards the typography and illustrations at least, is designed to be equal to any publication hitherto issued in this country. You may be surprised that I should address you on the subject, but a moment's explanation may suffice to convey my views and wishes. The prefatory chapter will embrace a view ot the varieties of the human race, embracing, among other topics, some remarks on the ancient Egyptians. The position I have always assumed is, that the present Copts are not the remains of the ancient Egyptians, and in order more fully to make comparisons, it is very important that I should get a few heads of Egyptian mummies from Thebes, etc. I do not care to have them entirely perfect specimens of embalming, but perfect in the bony structure, and with the hair preserved, if possible. It has occurred to me that, as you will reside at Cairo, and with your perfect knowledge of affairs in Egypt, you would have it in your power to employ a confidential and well-qualified person for this trust." Evidently before Elisha Kent Kane left Philadelphia, Dr. Morton had requested his assistance in the collection of skulls to be found in the countries visited by him.

In 1839, Dr. Morton was elected professor of anatomy in the Pennsylvania College from which his resignation was accepted with regret in 1843. In 1849 he published an elaborate and valuable work on human anatomy. Dr. Morton died suddenly in 1851 at a time when his professional activities were at their height. He was pursuing his craniological investigation with unabated zeal and he had recently made important accessions to his collection when the end came. He was actively engaged in the study of archaeology, Egyptian, Assyrian and American, as collateral to his favorite subject.

of the frigate United States.[19] He was bitterly disappointed in these orders. His application for duty was made with a view to service in Mexican waters but he was "too loyal to withdraw his request or attempt to modify his destination."

The frigate sailed on May 25, 1846. By the middle of June it had reached Cape Verde where it joined the African squadron at this time engaged in regulating the slave trade.

When Dr. Kane was in Brazil in 1843, he had made the acquaintance of a Portuguese merchant largely engaged in the slave trade, and in return for some professional services, received from him introductory letters to his agents on the African coast. Presenting these letters when ashore, he was entertained with very liberal hospitality and admitted to the confidence of the slave agents. He took advantage of an opportunity to visit the great slave market in the interior of Dahomey. Here he saw so many evidences of brutal native savagery that he returned to the ship with the impression that whatever may have been the case in the early periods of the slave trade the negroes that were then driven to the coast might well congratulate themselves on the commutation of their fate, even with the terrible middle passage before them. "He became convinced that the predatory wars of the interior, though stimulated in some degree by the cupidity of the chiefs in the hope of gain through the sale of captives, had their origin in a dark fanaticism that sought prisoners as victims for sacrifice."

Dr. Kane had not been long on the African coast when the pestilence of that region made its appearance on board the frigate. An examination of the medical journal of the United States shows, from the symptoms recorded, that the infection was malaria of a severe type. In a letter to his father he wrote:

> I am sitting in my little cockpit state-room. Fumes of mouldy boots and molasses are exuding from the dirty deck below me; and heaven's breath comes to me through a long canvas tube. This grateful conductor of vitality is called a wind-sail. Its funnel has been pointed opposite my kennel, and I am thankfully enjoying the wet-towel smell of the scanty breeze. The jaundiced-looking spermaceti candle on my table has been gasping so at the scanty oxygen that I have even put it out of its misery, and I am writing by the beams of the hatchway-lantern. The weather above is rainy, and it is night, there as well as here. The thermometer is at eighty-five degrees. Our voyage from Cape Verd (oh! that sleepy period of stagnation) was a nearly continuous calm. Six cases of the dreaded fever broke out before we had been a week from port; and I am now in the midst of the true responsibilities of a navy surgeon. We are on our way south. A London homeward-bound [vessel] may deliver this note: if so, let it assure you of my continued health and determination to make the best of my bad bargain. Tell mother not to be uneasy. The fever is not contagious, and one never loses by attention to duty.

In less than three months after this letter was written Dr. Kane contracted malaria and for three weeks he was seriously ill, suffered from repeated chills and was delirious when his temperature rose. His convalescence was protracted and as may be seen from the following letter upon the recommendation of a board of medical survey he was sent home.

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[19] The U. S. S. United States was a frigate of 1607 tons, carrying forty-four-pounders and a crew of 480 men, built at Philadelphia during the years 1796–97, at a cost of $300,000. Her length was 175 feet, beam 44 feet and draft 23 feet. She was very slow under sail and might be termed the navy's first lame duck. Some years after she was launched her masts were stepped differently, altered a few inches, and her sailing qualities were improved.

The vessel saw service in the West Indies from 1798 to 1801 and then was out of commission until 1810. On October 25, 1812, she captured H.M.S. Macedonian. From 1815 to 1819 the vessel was used in the Mediterranean. From 1824 to 1827 she was in the Pacific; 1832 to 1834 saw her once more in the Mediterranean, 1839–1840 along the Atlantic coast of the United States. Commodore T. Ap. C. Jones used her as his flagship in the Pacific from 1842 to 1844. Commodore George C. Reed used her as flagship of the African squadron from 1846 to 1849. The United States was destroyed at the Navy Yard, Norfolk, April 20, 1861, to prevent her falling into the hands of the Confederate forces.

U. S. Frigate United States
Porto Praya, March 9, 1847

Dr. Kane returns home on account of ill health. His disease was the coast-fever, and the attack exceedingly severe. It manifested itself on the 1st of February, and continued with unmitigated violence for ten days. The abatement of the fever was not then complete, but greatly diminished, and finally left the patient on the twenty-first day worn out and exhausted. His recovery and convalescence have been slow, his present prostration and debility great. He gains strength tardily; and I fear that if he be kept in this baleful climate he may relapse and die, or suffer in his constitution. Under this view I have thought it best to send him home. He goes in the Chesapeake and Liberian Packet, a new and comfortable ship, and will have every possible attention extended to him. May he soon reach his country and rejoin his family in renewed health! God bless him!

I part with him with regret, and shall miss him much. I lose not only a useful and necessary assistant, but a valued and esteemed young friend. Our association both official and social has been of the pleasantest kind.

Very truly, your obedient servant,
Thos. Dillard.
Fleet Surgeon.

Dr. Kane reached Philadelphia on April 6, 1847. He immediately reported his return to the Navy Department and requested duty in the Gulf of Mexico as soon as he was fit for service. By the time he was ready for duty however, the Navy had completed its share of the labor incident to the invasion of Mexico. Both on the Pacific and in the Gulf all the ports had been taken. There was, however, one chance of active service remaining for him. The United States Marines were penetrating the interior of Mexico, and in October we find Dr. Kane applying for "the position of one of the assistant surgeons to the Marine Corps now in active service at the seat of war." He followed his written request by a personal appeal to the Secretary of the Navy and succeeded in obtaining orders to "proceed to the headquarters of the United States Army in Mexico and to report to the commanding general for duty."

The city of Mexico had surrendered a month before to General Scott, but American troops were at that time besieged in Puebla and communication between the coast and the commander-in-chief in the city of Mexico was interrupted by bands of guerillas. An important dispatch which had been forwarded in triplicate by the Secretary of War had not been delivered to General Scott or at least its receipt at his headquarters had not been acknowledged. It was decided by the Secretary to confide the contents of this dispatch orally to Dr. Kane who was to get to Mexico City as best he could. It appears to have been the object of the authorities to employ Dr. Kane in the capacity of a medical intelligence officer as is indicated in the following two letters:

Navy Department,
Bureau of Medicine and Surgery
November 5, 1847

Sir:

I take the opportunity afforded by your departure for the seat of war under special orders from this Department, to urge upon you the necessity and advantage of collating and preserving such facts relating to field and hospital organization, and especially such surgical cases and statistics, as may come under your observation; and it is my wish that you make a full and accurate report of all such information to this Bureau.

Respectfully,
T. Harris,
Chief of Bureau of Medicine and Surgery.
Assistant Surgeon E. K. Kane, U. S. N.

War Department,
Surgeon-General's Office,
November 5, 1847

To the officers of the Medical Department serving in Mexico.

Gentlemen:

The bearer of this, Dr. Kane, of the Navy, impelled by a laudable zeal for professional improvement, and a desire to participate in active field-service, has obtained an order from the Secretary of the Navy to proceed to the head-quarters of the main army and report to the commanding general for duty.

Dr. Kane is instructed to visit the general and field hospitals, &c. on his route; and I feel assured that the courtesy of the medical staff in the Army will afford him all the facilities necessary to promote the objects he may have in view.

I beg leave to commend him to your friendly consideration.

I have the honor to be, very respectfully,
your obedient servant,
H. L. Heiskill,
Acting Surgeon-General.

Dr. Kane left Washington on November 6, 1847 for New Orleans. On his way south he procured a thorough-bred horse which later bore him through a hotly contested fight. The horse and his rider reached New Orleans on November 22, and the following day sailed for Vera Cruz in the U. S. S. Fashion. They had a rough time of it in the Gulf, encountered one of its severest northers and were for some days in great peril.

Landing at Vera Cruz, Dr. Kane traveled inland with troops under General Armstrong of Tennessee as far as Perote. Here after some delay he joined a company of contra-guerillas, Mexicans friendly to the American troops, who were en route for the capital. On the sixth of January, 1848, this company encountered a body of Mexican guerillas who were escorting a number of Mexican officers to Orizaba. The conflict which ensued was short but severe. The Mexican guerillas were defeated, the Mexican officers taken prisoners and both Dr. Kane and his horse were severely wounded. The horse died as a result of the injuries and in the following claim upon the War Department for compensation for his horse we have his account of the encounter and its aftermath:

Philadelphia, July 21, 1848

Sir:

I left Perote fortress on the 3d of January, 1848, under orders to report to General Scott at the city of Mexico. My escort consisted of a party of lancers, Mexicans in the pay of the United States, commanded by Colonel Domingues.

On the 6th of January, at a place intermediate to Oyo de Agua and Nopaluca, some twenty-five miles from Puebla, we encountered a body of Mexicans escorting Generals Gaona and Torrejon and other officers. After a short action, we succeeded in routing them, taking forty-four prisoners. Circumstances having made the two generals my personal prisoners, they claimed my special protection against Domingues' band, who sought to kill them after the surrender; and in the effort to shield them against a charging party, headed by Lieutenant Rocher, I received a severe wound from a lance in the region of the bladder, my horse having immediately before been struck down by a lance under the shoulder from the same party.

I succeeded in raising him up and keeping him till we reached Nopaluca, when he sank from exhaustion. I was transferred to another animal, but, finding myself unable to ride, was placed in a Mexican car with the rest of the wounded.

My horse was forced along with difficulty by my servant; but, becoming uncontrollable while making an effort to drink at one of the fountains or shallow wells of the country, in the Barris San Miguel, he was so far precipitated into it as from his weakness to be unable to recover.

In company with Lieutenant Foster, I saw his body there at the halt. This was on the 7th.

On reaching Puebla, I was attacked very dangerously by congestive typhus fever, in consequence of my wound and the exposure which followed it.

My certificate, and the affidavit of Lieutenant Foster which accompanies it, were made at the suggestion of Major Morris of the artillery, then acting as judge advocate, as soon as I was able to write.

My condition at the time may serve as the apology for the brevity and want of detail of those papers.

I was subsequently carried in a wagon to the city of Mexico, where I reported, and, having been inspected by the surgeons, was ordered to the United States as invalided. I therefore saw little of Lieutenant Foster after our interview at Puebla, and, his corps having been disbanded, I do not know his residence. He belonged to the Louisiana mounted men, Captain Lewis' company. I am unable for this reason to procure a supplemental affidavit from him, and he was the only American officer on the field with me; but I shall transmit copies of this letter to the principal officers of the United States whom I found in command at Puebla, and shall write them to verify such of the facts as have come to their knowledge either from personal observation or official position.

I have the honor to be, sir,
Your most obedient Servant,
Elisha K. Kane

To the Honorable Secretary of War.

In January, 1849, we find Dr. Kane at Norfolk, Virginia, attached to the storeship Supply[20] destined for Lisbon, the Mediterranean and Rio de Janeiro. The ship sailed in February.

At sea, "beating tediously between Spezzia and Gibraltar," on the sixteenth of May, he wrote to one of his friends. The letter contains a hint of the cardiac disease which frequently inconvenienced him and finally proved fatal.

> I have been sick, and, indeed, am not yet well . . . The good people at home (God bless them!) cannot realize, perhaps, that a man riding wild horses and preparing for medical examinations may yet need every hygienic influence to keep him from malignant disease. Yet so it is; and I only blame myself for not acting up to my own convictions.
>
> The fact is that I did wrong in going to sea. The exposure and wear and tear have proved too much for a constitution already enfeebled by Africa and Mexico, and now the same miserable controlling tyrant which has kept you so long a slave is about to extend his claws over me. The "sentimental buck" is fast lapsing into a confirmed valetudinarian!
>
> I do not state all this in a puling, unmanly spirit of useless regret, but because to you, my confidential friend, I feel that the naked truth is a sort of duty. Mexico, or indeed any other scheme of life, is denied me, save the Navy; and, if my cough does not leave me, I shall have to leave home as soon as its blessings are tasted, and spend my winters in the Tropics.

The Supply returned to the United States arriving at Norfolk toward the close of September. In October we find him at home on waiting orders.

In January, 1850, Dr. Kane joined the U. S. Coast Survey Steamer Walker, which was engaged in a survey of the coast of the Gulf of Mexico in the vicinity of Mobile, and subsided into the routine duty of the service. His poetic nature is revealed in the following letter written while on this duty:

> 1st of May, Short's Hotel
>
> Who ever heard of Short's Hotel? A perfect little paradise, looking out upon the Bay of Mobile, and containing a four-post bedstead. Destitute of paint or whitewash or wash-basin is Short's Hotel; and yet it is the dearest, sweetest little abode of honeysuckled comfort that ever hung from the boughs of a live-oak. Short's Hotel is about the size of our discarded wash-house. Short's Hotel floats on a velvet-lawned, magnolia-studded clearing on the bluff bank. Short's Hotel, to give the climax to its beauties, is completely invisible. The limbs of a great gnarled live-oak, all covered with long gray moss, overhang it like the reliquary of a patriarch; and, save when the sea-breezes thrust away the venerable screen, you would think yourself looking at a thicket of Cherokee roses. And here, dear fellow, am I.
>
> I wish, dear, sick, working friend, that you could enjoy the climate, which just at this moment is preaching to me its sermon of thankfulness; for the only sermons that now reach my gizzard-plated bowels are those of the dear outer world of nature. Summer, of a perennial but sluggish sort, is mellowing every thing around me. God bless you!
>
> The breeze comes to me purple-stained with the sunset, rippling over the bay with an eloquent crescendo of wavelets and a cadenza of tiny surf. God bless the breeze, too, for I know that that great jungle of glaucous-leafed magnolia (t'other side of Short's) would stifle me with a sirocco of fragrance could it drive its perfume to leeward. Cows, too, have left their impress, the specific mark of

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[20] The U. S. S. Supply to which Dr. Kane was attached was purchased in 1846 at a cost of $60,000. She carried a crew of thirty-seven men and had a displacement of 547 tons. After service in various parts of the world she was sold at New York in 1884.

cow-some-where, and I smell a presentiment of milk for supper.

We will leave Dr. Kane for a moment to enjoy the comforts of Short's Hotel and the tranquility of the hours spent on board the surveying vessel and turn our attention to a matter which was the topic of the day at that time, and we will quote Dr. Kane's own words.[21]

It was in 1844 that Sir John Franklin was appointed to the charge of his latest polar expedition. His first visit to the Arctic regions had been in 1818, as a captain in Commodore Buchan's squadron; and after this had returned unsuccessful, he had headed that most fearful of all the overland journeys of our period, the descent to the mouth of the Copper Mine River. Still later in 1825, he had gone back to the same field of toil, and had delineated, in conjunction with Sir John Richardson, the more western portions of Arctic America.

No officer could have been found in the marine of any country who combined more admirable qualifications for the duties of an explorer. To the resolute enterprise and powers of endurance, which his former expeditions had tested so severely, Sir John Franklin united many delightful traits of character. With an enthusiasm almost boyish, he had a spirit of large but fearless forecast, and a sensitive kindness of heart that commiserated every one but himself.

His vessels, the Erebus and Terror, were soon fitted for sea; and on the 25th of May, 1845, he weighed anchor, with a picked crew, and as noble a band of officers as ever volunteered for a service of peril. They were met by a whaler on the 26th of July following, in the upper waters of Baffin's Bay, moored to an iceberg, and waiting for an opening in the "pack." They have not been seen since.[22]

When 1848 had arrived without any tidings of this party, Great Britain dispatched three separate expeditions to reclaim them. These were well devised; but peculiar drawbacks seemed to attend their efforts, and before the beginning of 1850, they had all abandoned the search, almost without attaining the first threshold of inquiry.

Their failure aroused everywhere the generous sympathies of men. Science felt for its votaries, humanity mourned its fellows, and an impulse, holier and more energetic than either, invoked a crusade of rescue. That admirable woman, the wife of Sir John Franklin, not content with stimulating the renewed efforts of her own countrymen, claimed the co-operation of the world. In letters to the President of the United States, full of the eloquence of feeling, she called on us, as a "kindred people, to join heart and hand in the enterprise of snatching the last navigator from a dreary grave."

The delays incident to much of our national legislation menaced the defeat of her appeal. The bill making appropriations for the outfit of an expedition lingered on its passage, and the season for commencing operations had nearly gone by. At this juncture, a noble-spirited merchant of New York, of whom, as an American and a man I can hardly trust myself to speak, fitted out two of his own vessels and proferred them gratuitously to the government. Thus prompted by the munificent liberality of Mr. Henry Grinnell,[23] Congress hastened to take the expedition under its charge, and authorized the President to detail from the Navy such necessary officers and seamen as might be willing to engage in it.

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[21] Elisha Kent Kane. U. S. Grinnell expedition, N. Y., 1854. Intro. Chap.

[22] In 1854 Dr. Rae of the Hudson Bay Company heard that a party of white men had been seen, four winters before, on King William's Land, and that their bodies had afterwards been found on the mainland. From the Eskimos who gave him this report he obtained various unquestionably authentic relics of the Franklin expedition. In 1859 numerous other relics were found including a paper on which was written the following memorandum:

"25 April, 1848, H. M. Ships Terror and Erebus were deserted on 22 April, 5 leagues N. N. W. of this, having been beset since 12 September, 1846. The officers and crews, consisting of 105 souls, under the command of Captain F. R. M. Crozier, landed here in lat. 69° 37′ 42″ N., long. 98° 41′ W. Sir John Franklin died on 11 June, 1847 and the total loss by deaths in the expedition has been to this date 9 officers and 15 men."

Nothing further has ever been heard of this expedition. It vanished in the great white silence of the north.

[23] Henry Grinnell was born in New Bedford, Mass., in 1799 and died in New York, June 30, 1874. In 1828 he settled in New York and amassed a fortune in the shipping business. This gave him an opportunity to fit out the expedition of which Dr. Kane was senior medical officer as well as other expeditions of a like nature. In recognition of his services to geographical science the American Geographical Society elected him their president and the coast to the north of Smith Sound was named Grinnell Land.

No officer in our Navy responded more ardently to Lady Franklin's appeal than did Dr. Kane. He volunteered his services and pressed his application by every means in his power. The following letter is one of many he wrote to secure his appointment to the expedition:

> U. S. Coast Survey, Steamer Walker,
> Mar. 7th, '50
>
> Dear Sir:
>
> I have already forwarded through the Bureau of Medicine and Surgery an Official letter volunteering my services on Furlough pay, upon the proposed expedition in search of Sir John Franklin.
>
> Knowing that such an Expedition will command many volunteers from our Medical Corps, and that the only method of Selection, open to the Department, must be based upon the professional and personal qualifications of the Candidates, I would refer you to the Honble.: George M. Dallas, Mr. Bache of our Coast Survey, and Mr. Meredith of the Treasury, as gentlemen knowing myself and family and able to give any information desired.
>
> Very faithfully, Your Obdt. Servant,
> E. K. Kane,
> Passed Asst. Surgeon, U. S. N.
>
> W. Ballard Preston,
> Secretary of the Navy,
> Washington.

He seemed doomed to disappointment. On the twenty-fourth of March, 1850, at Mobile, he wrote to a friend:

> The Department has given my "volunteer" the slighting answer of silence, leaving me the simple satisfaction of having done as I did do. Now, however, as I am probably for months a coast-survey incumbent, your health, morale, and everything else lead me to press upon you my invitation [to visit me].
>
> Come to me by the quiet valley of turbulent waters. . . This quiet sunshine would not be uncongenial; you could stuff alligators, read books, drink claret, or eat French dinners, just as it pleased you. . . By the latter days of June we travel northward; stopping at Havana, Charleston, Norfolk, and then journeying, you and myself, from Boston to Philadelphia by the railroads.

He was unaware that he had reached the turning point in his life, that the great adventure he had always sought was just before him. His "Personal Narrative of the First United States Grinnell Expedition" opens with a tone of surprise:

> On the 12th of May, while bathing in the tepid waters of the Gulf of Mexico, I received one of those courteous epistles from Washington which the electric telegraph has made so familiar to naval officers. It detached me from the coast-survey and ordered me to "proceed forthwith to New York for duty upon the Arctic Expedition."
>
> Seven and a half days later, I had accomplished my overland journey of thirteen hundred miles, and in forty hours more our squadron was beyond the limits of the United States: the Department had calculated my travelling-time to a nicety.

During the year 1850, the British Government sent out several vessels to assist in the search for the lost expedition, the Enterprise and Investigator by Behring's Strait, the Resolute and Assistance and two screw propellers, the Pioneer and Intrepid, by Baffin's Bay. The Arctic veteran, Sir John Ross, went out in a schooner provided by public subscription and Lady Franklin herself equipped two other vessels, a ship of two hundred and twenty-five tons, bearing her own name, and a clipper-brig of one hundred and twenty tons, named the Sophia.

As we have seen, our own Government, urged by public sentiment and stimulated by the offer of two vessels for the service by Mr. Grinnell, went into the adventure with zeal.

By a joint resolution of the two houses of Congress, passed May 2, 1850, the President was authorized as follows:

> To accept and attach to the Navy two vessels offered by Henry Grinnell, Esq., to be sent to the Arctic seas in search of Sir John Franklin

> and his companions. The President may detail from the Navy such commissioned and warrant officers and seamen as may be necessary for said expedition, and who may be willing to engage in it. The said officers and men shall be furnished with suitable rations for a period not exceeding three years, and shall have the use of such instruments as the Departments can provide.
>
> The said vessels, officers and men shall be in all respects under the laws and regulations of the Navy of the United States until their return, when the vessels shall be delivered to Henry Grinnell. Provided, that the United States shall not be liable to any claim for compensation in case of loss, damage, deterioration, use or risk of the vessels.

These vessels were two little hermaphrodite brigs, the Advance of 144 tons and the Rescue of 91 tons.

Dr. Kane, now a passed assistant surgeon in the Navy, went in the Advance as senior medical officer of the expedition. Assistant Surgeon Benjamin Vreeland was assigned to the Rescue. The expedition was commanded by Lieutenant Edwin J. DeHaven, United States Navy, who had seen similar service in the Wilkes expedition of 1838 to the south polar continent.

Dr. Kane describes the departure of the vessels from New York, the structure of the Advance and his preparations for comfort in the following paragraphs extracted from his first book, "The Grinnell Expedition in Search of Sir John Franklin."

> During the fraction of a day that was left me at New York, I strove assiduously to secure a few implements for scientific observation, as well as to get together the elements of an Arctic wardrobe. I had, of course, the zealous aid of Mr. Grinnell in these hurried arrangements; but I could not help being struck with the universal sympathy displayed toward our expedition. From the ladies who busied themselves in sealing up air-tight packages of fruit-cakes, to the managers of the Astor House, who insisted that their hotel should be the free head-quarters of our party, it was one continued round of proffered services. I should have a long list of citizens to thank if I were allowed to name them on these pages.
>
> It was not, perhaps, to be expected that an expedition equipped so hastily as ours, and with one engrossing object, should have facilities for observing very accurately, or go out of its way to find matters for curious research. But even the routine of a national ship might, I was confident, allow us to gather something for the stock of general knowledge. With the assistance of Professor Loomis, I collected as I could some simple instruments for thermal and magnetic registration, which would have been of use if they had found their way on board. A very few books for the dark hours of winter, and a stock of coarse woolen clothing, reenforced by a magnificent robe of wolf-skins, that had wandered down to me from the snow-drifts of Utah, constituted my entire outfit; and with these I made my report to Commodore Salter at the Brooklyn Navy Yard.
>
> Almost within the shadow of the line-of-battle ship North Carolina, their hulls completely hidden beneath a projecting wharf, were two little hermaphrodite brigs. Their spars had no man-of-war trigness; their decks were choked with half-stowed cargo; and for size, I felt as if I could straddle from the main hatch to the bulwarks.
>
> At this first sight of the Grinnell expedition, I confess that the fastidious experience of naval life on board frigates and corvettes made me look down on these humble vessels. They seemed to me more like a couple of coasting schooners than a national squadron bound for a perilous and distant sea. Many a time afterward I recalled the short-sighted ignorance of these first impressions, when some rude encounter with the ice made comfort and dignity very secondary thoughts.
>
> The Advance, my immediate home, had been originally intended for the transport of machinery. Her timbers were heavily moulded, and her fastenings of the most careful sort. She was fifty-three tons larger than her consort, the Rescue; yet both together barely equaled two hundred and thirty-five tons.
>
> To navigate an ice-bound sea, speed, though important, is much less so than strength. Extreme power of resistance to pressure must be combined with facility of handling, adequate stowage, and a solidity of frame that may encounter sudden concussions fearlessly; and it seemed to both Mr. Grinnell and Lieutenant DeHaven that these qualities might be best

embodied in such small vessels as the Advance and Rescue. It was, indeed, something like a return to the dimensions of our predecessors of the olden time; for the three vessels of Frobisher summed up only seventy-five tons, and Baffin's largest was ten tons less in burden than the Rescue. As the vessels of our expedition were more thoroughly adapted, perhaps, for this dangerous service than any that had been fitted out before for the Arctic Seas, I will describe them in detail.

Commencing with the outside; the hull was literally double, a brig within a brig. An outer sheathing of two and a half inch oak was covered with a second of the same material; and strips of heavy sheet-iron extended from the bows to the beam, as a shield against the cutting action of the new ice. The decks were double, made water-tight by a packing of tarred felt between them. The entire interior was lined, ceiled, with cork; which, independently of its low conducting power, was a valuable protection against the condensing moisture, one of the greatest evils of the polar climate.

The strengthening of her skeleton, her wooden frame-work, was admirable. Forward, from kelson to deck, was a mass of solid timber, clamped and dove-tailed with nautical wisdom, for seven feet from the cutwater; so that we could spare a foot or two of our bows without springing a leak. To prevent the ice from forcing in her sides, she was built with an extra set of beams running athwart her length at intervals of four feet, and so arranged as to ship and unship at pleasure. From the Samson-posts, strong radiating timbers, called shores, diverged in every direction; and oaken knees, hanging and oblique, were added wherever space permitted.

Looking forward to the hampering ice fields, our rudder was so constructed that it could be taken on board and replaced again in less than four minutes. Our winch, capstan, and patent windlass were of the best and newest construction.

A little hurricane-house amidships contained the one galley that cooked for all hands, and a large funnel of galvanized iron was connected with the chimney, in such a way that the heat circulating around it might supply us with melted snow. An armorer's forge, a full set of ice anchors, a couple of well-built whale-boats and three anthracite stoves, made part of the outfit.

In a word, everything about the two vessels bore the marks of intelligent foresight and unsparing expenditure. . . .

Our crews consisted of man-of-war's-men of various climes and habitudes, with constitutions most of them impaired by disease, or temporarily broken by the excesses of shore life. But this original defect of material was in a great degree counteracted by the strict and judicious discipline of our executive officers. The crews proved in the end willing and reliable; and, in the midst of trials which would have tested men of more pretension, were never found to waver. I record, in the commencement of this narrative, how much respect and kindly feeling I, as one of their little body, entertain for their essential contribution to the ends of the expedition. . . .

About one o'clock on the 22d of May, the asthmatic old steam-tug that was to be our escort to the sea moved slowly off. Our adieux from the Navy Yard were silent enough. We cost our country no complimentary gunpowder; and it was not until we got abreast of the city that the crowded wharves and shipping showed how much that bigger community sympathized with our undertaking. Cheers and hurrahs followed us till we had passed the Battery, and the ferry-boats and steamers came out of their track to salute us in the bay.

The sky was overcast before we lost sight of the spire of old Trinity; and by evening it had clouded over so rapidly, that it was evident we had to look for a dirty night outside. Off Sandy Hook the wind freshened, and the sea grew so rough, that we were forced to part abruptly from the friends who had kept us company. We were eating and drinking in our little cabin, when the summons came for them to hurry up instantly and leap aboard the boat. The same heavy squall which made us cast loose so suddenly the cable of the steamer gathered upon us the night and the storm together, and in a few minutes our transition was complete, from harbor life and home associations to the discomforts and hardships of our career.

The difference struck me, and not quite pleasantly, as I climbed over straw and rubbish into the little peculium which was to be my resting-place for so long a time. The cabin, which made the homestead of our human beings, was somewhat less in dimensions than a penitentiary cell. There was just room enough for two berths of six feet each on a side; and the area between, which is known to naval men as "the country," seemed completely filled up with the hinged table, the four camp stools, and the lockers. A hanging lamp, that creaked uneasily on its "gimbals," illuminated through the mist some long rows of crockery shelves and the dripping step ladder that led directly from the wet deck above. Everything spoke of cheerless discomfort and narrow restraint.

By the next day the storm had abated. We were out of sight of land, but had not yet parted with the last of our well-wishers. A beautiful pilot-boat, the Washington, with Mr. Grinnell and his sons on board, continued to bear us company. But on the 25th we saw the white flag hoisted as the signal of farewell. We closed up our letters and took them aboard, drank healths, shook hands, and the wind being fair, were out of sight of the schooner before evening.

I now began, with an instinct of future exigencies, to fortify my retreat. The only spot I could call my own was the berth I have spoken of before. It was a sort of bunk, a right-angled excavation, of six feet by two feet eight in horizontal dimensions, let into the side of the vessel, with a height of something less than a yard. My first care was to keep water out, my second to make it warm. A bundle of tacks, and a few yards of India-rubber cloth, soon made me an impenetrable casing over the entire wood-work. Upon this were laid my Mormon wolf-skin and a somewhat ostentatious Astrakhan fur cloak, a relic of former travel. Two little wooden shelves held my scanty library; a third supported a reading lamp, or, upon occasion, a Berzelius' argand, to be lighted when the dampness made an increase of heat necessary. My watch ticked from its particular nail, and a more noiseless monitor, my thermometer, occupied another. My ink-bottle was suspended, pendulum fashion, from a hook and to one long string was fastened, like the ladle of a street-pump, my entire toilet, a tooth-brush, a comb, and a hair-brush.

Now, when all these distributions had been happily accomplished, and I crawled in from the wet, and cold, and disorder of without, through a slit in the India-rubber cloth, to the very centre of my complicated resources, it would be hard for any one to realize the quantity of comfort which I felt I had manufactured. My lamp burned brightly; little or no water distilled from the roof; my furs warmed me into satisfaction; and I realized that I was sweating myself out of my preliminary cold, and could temper down at pleasure the abruptness of my acclimation.

From this time I began my journal. At first its entries were little else than a selfish record of personal discomforts. It was less than a fortnight since I was under the sky of Florida, looking out on the live oak with its bearded moss, and breathing the magnolia. Comfortable as my bunk was, compared with the deck, I was conscious that, on the whole, I had not bettered my quarters.

Though I accompanied this expedition as its senior medical officer, I had no claim to be considered as its historian. Such a province belonged strictly to our commander; but he having declined making any other than an official report, I have been invited to prepare a history of the cruise, under the form of a personal narrative. I had promised my brother at parting, that I would keep a journal, to furnish topics, perhaps, for a fireside conversation; and I have chosen to draw most of my material from this record. I might have done more wisely, if I had been content to substitute sometimes educated opinions of others for those which impressed me at the moment. My apology must be, that I do not profess to be accurate, but truthful.

After thirty-one days of rough weather, during which time Dr. Kane suffered severely from seasickness, the vessels approached the coast of Greenland and touched at Whale-fish Island, later at Lively, now called Godhaven, located on Disco Island and then pushed north into the Arctic. A perusal of Dr. Kane's narrative of this expedition shows what a large amount of work he did. The account of the voyage which lasted sixteen months is too long for us to consider in detail but the following extracts from Dr. Kane's journal will throw some light on the conditions encountered:

Sept. 8th. The summer is now leaving us rapidly. The thermometer had been 21° and 23° for several nights, and scarcely rose above 32° in the day time. Our little harbor at Barlow's Inlet was completely blocked in by heavy [ice]

> masses; the new ice gave plenty of sport to the skaters; but on ship board it was uncomfortably cold. As yet we had no fires below; and, after drawing around me the India-rubber curtains of my berth, with my lamp burning inside, I frequently wrote my journal in a freezing temperature. "This is not very cold no doubt" (I quote from an entry in my journal) "not very cold to your forty-five minus men of Arctic winters; but to us poor devils from the zone of the liriodendrons and peaches, it is rather cold for the September month of watermelons" . . . I have the rheumatism in my knees.
>
> September 11. Wednesday. Snow, light and fleecy, covering the decks and carried by our clothes into our little cabin. The moisture of the atmosphere condenses over the beams, and trickles down over the lockers and bedding.
>
> Sept. 12. 10 P.M. Just from deck. How very dismal everything seems! The snow is driven like sand upon a level reach, lifted up in long curved lines and then obscuring the atmosphere with a white darkness. The wind too, is howling in a shrill minor, singing across the hummock ridges . . . our running rigging is so coated with icicles as to make it impossible to work it. The thermometer stands at 14°.
>
> Sept. 13. The lowest temperature last night was +5°, but the wind makes it colder to sensation. We are grinding through newly-formed ice three inches thick; the perfect consolidation being prevented by its motion and the wind. Even in the little fireless cabin in which I now write, water and coffee are freezing, and the mercury stands at 29° . . .
>
> The navigation is certainly exciting. I have never seen a description in my arctic readings of anything like this. We are literally running for our lives, surrounded by the imminent hazards of sudden consolidation in an open sea. All minor perils, nips, bumps and sunken bergs are discarded; we are staggering along under all sail, forcing our way while we can. One thump received since I commenced writing, jerked the time-keeper from our binnacle down the cabin hatch, and, but for our strong bows, seven and a half solid feet, would have stove us in. Another time, we cleared it down at eight knots . . . . Grim winter was following close upon our heels; and even the captain sanguine and fearless in emergency as he always proved himself, as he saw the tenacious fields of sludge and pancake thickening around us, began to feel anxious. Mine was a jumble of sensations . . . . The sound of our vessel crunching her way through the new ice is not easy to be described . . . . I was listening to this sound in my little den after a sorrowful day, close upon zero, trying to warm up my stiffened limbs. Presently it grew less, then increased, then stopped, then went on again, but jerking and irregular; and then it waned, and waned and waned away to silence.
>
> Down came the Captain: "Doctor, the ice has caught us; we are frozen up." On went my furs at once. As I reached the deck, the wind was there blowing stiff, and the sails were filled and puffing with it. It was not yet dark enough to hide the smooth surface of ice that filled up the horizon holding the American expedition in search of Sir John Franklin imbedded in its center. There we were, literally frozen tight in the mid-channel of Wellington's Straits.

Here the two vessels remained until June 8, 1851, on which date the ice floe broke up. Of this imprisonment in the ice Dr. Kane wrote:

> The cold came upon us gradually. The first thing that really struck me was the freezing up of our water-casks, the drip-candle appearance of the bung-holes, and our inability to lay the tin cup down for a five-minutes' pause without having its contents made solid. Next came the complete inability to obtain drink without manufacturing it. For a long time we had collected our water from the beautiful fresh pools of the icebergs and floes; now we had to quarry out the blocks in flinty, glassy lumps, and then melt it in tins for our daily drink. This was in Wellington Channel.
>
> By-and-by the sludge which we passed through as we traveled became pancakes and snow-balls. We were glued up. Yet, even as late as the 11th of September, I collected a flowering Potentilla from Barrow's Inlet. But now anything moist or wet began to strike me as something to be looked at, a curious, out-of-the way production, like the bits of broken ice round a can of mint-julep. Our decks became dry and studded with botryoidal lumps of dirty foot-trodden ice. The rigging had nightly accumulations of rime, and we learned to be careful about coiled ropes and iron work. On the 4th of October we had a mean temperature below zero.

By this time our little entering hatchway had become so complete a mass of icicles, that we had to give it up, and resort to our winter doorway. The opening of a door was now the signal for a gush of smoke-like vapor; every stove-pipe sent out clouds of purple steam; and a man's breath looked like the firing of a pistol on a small scale.

All our eatables became laughably consolidated, and after different fashions, requiring no small experience before we learned to manage the peculiarities of their changed condition. Thus, dried apples became one solid breccial mass of impacted angularities, a conglomerate of sliced chalcedony. Dried peaches the same. To get these out of the barrel, or the barrel out of them, was a matter impossible. We found after many trials, that the shortest and best plan was to cut up both fruit and barrel by repeated blows with a heavy axe, taking the lumps below to thaw. Saur-kraut resembled mica, or rather talcose slate. A crowbar with chiseled edge extracted the laminae badly; but it was perhaps the best thing we could resort to.

Sugar formed a very funny compound. Take q.s. of cork raspings, and incorporate therewith another q.s. of liquid gutta-percha or caoutchouc, and allow to harden: this extemporaneous formula will give you the brown sugar of our winter cruise. Extract with the saw; nothing but the saw will suit. Butter and lard, less changed, require a heavy cold chisel and mallet. Their fracture is conchoidal, with haematitic (iron-ore pimpled) surface. Flour undergoes little change, and molasses can at −28° be half scooped, half cut by a stiff iron ladle.

Pork and beef are rare specimens of Florentine mosaic, emulating the lost art of petrified visceral monstrosities seen at the medical schools of Bologna and Milan: crow-bar and handspike! for at −30° the axe can hardly chip it. A barrel of it sawed in half, and kept for two days in the caboose house at +76°, was still as refractory as flint a few inches below the surface. A similar bulk of lamp oil, denuded of the staves, stood like a yellow sandstone roller for a gravel walk.

Ices for the dessert come of course unbidden, in all imaginable and unimaginable variety. I have tried my inventive powers on some of them. A Roman punch, a good deal stronger than the noblest Roman ever tasted, forms readily at −20°. Some sugared cranberries, with a little butter and scalding water, and you have an impromptu strawberry ice. Many a time at those funny little jams, that we call in Philadelphia "parties," where the lady-hostess glides with such nicely-regulated indifference through the complex machinery she has brought together, I have thought I noticed her stolen glance of anxiety at the cooing doves, whose icy bosoms were melting into one upon the supper-table before their time. We order these things better in the Arctic. Such is the "composition and fierce quality" of our ices, that they are brought in served on the shaft of a hickory broom; a transfixing rod which we use as a stirrer first and a fork afterward. So hard is this terminating cylinder of ice, that it might serve as a truncheon to knock down an ox. The only difficulty is in the processes that follow. It is the work of time and energy to impress it with the carving-knife, and you must handle your spoon deftly, or it fastens to your tongue. One of our mess was tempted the other day by the crystal transparency of an icicle to break it in his mouth; one piece froze to his tongue, and two others to his lips, and each carried off the skin: the thermometer was at −28°.

Thus much for our Arctic grub. I need not say that our preserved meats would make very fair cannon-balls, canister-shot!

Now let us start out upon a walk, clothed in well-fashioned Arctic costume. The thermometer is, say −25°, not lower, and the wind blowing a royal breeze, but gently.

Close the lips for the first minute or two, and admit the air suspiciously through nostril and mustache. Presently you breathe in a dry, pungent, but gracious and agreeable atmosphere. The beard, eyebrow, eyelashes, and the downy pubescence of the ears, acquire a delicate, white, and perfectly-enveloping cover of venerable hoar-frost. The mustache and under lip form pendulous beads of dangling ice. Put out your tongue, and it instantly freezes to this icy crusting, and a rapid effort and some hand aid will be required to liberate it. The less you talk, the better. Your chin has a trick of freezing to your upper jaw by the luting aid of your beard; even my eyes have often been so glued, as to show that even a wink may be unsafe. As you walk on, you find that the iron-work of your gun begins to penetrate through two coats of woolen mittens, with a sensation like hot water.

But we have been supposing your back to the wind; and if you are a good arcticized subject, a warm glow has already been followed by a profuse sweat. Now turn about and face the wind; what a devil of a change! how the atmospheres are wafted off! how penetratingly the cold trickles down your neck, and in at your pockets! Whew! a jack knife, heretofore like Bob Sawyer's apple, "unpleasantly warm" in the breeches pocket, has changed to something as cold as ice and hot as fire: make your way back to the ship! I was once caught three miles off with a freshening wind, and at one time feared that I would hardly see the brig again. Morton,[24] who accompanied me, had his cheeks frozen, and I felt that lethargic numbness mentioned in the story books.

I will tell you what this feels like, for I have been twice "caught out." Sleepiness is not the sensation. Have you ever received the shocks of a magneto-electric machine, and had the peculiar benumbing sensation of "can't let go," extending up to your elbow-joints? Deprive this of its paroxysmal character; subdue, but diffuse it over every part of the system, and you have the so-called pleasurable feelings of incipient freezing. It seems even to extend to your brain. Its inertia is augmented; every thing about you seems of a ponderous sort; and the whole amount of pleasure is in gratifying the disposition to remain at rest, and spare yourself an encounter with these latent resistances. This is, I suppose, the pleasurable sleepiness of the story books.

I could fill page after page with the ludicrous miseries of our shipboard life. We have two climates, hygrometrically as well as thermometrically at opposite ends of the scale. A pocket-handkerchief, pocketed below in the region of stoves, comes up unchanged. Go below again, and it becomes moist, flaccid, and almost wet. Go on deck again, and it resembles a shingle covered with linen. I could pick my teeth with it.

You are anxious to know how I manage to stand this remorseless temperature. It is a short story, and perhaps worth the telling. "The Doctor" still retains three luxuries, remnants of better times: silk next his skin, a tooth-brush for his teeth, and white linen for his nose. Everything else is Arctic and hairy: fur, fur, fur. The silk is light and washable, needing neither the clean dirt of starch nor the uncomfortable trouble of flat-irons. It secures to me a clean screen between my epidermoid and seal-skin integuments.

I try to be a practical man as to clothing and the *et ceteras* of a traveler. All baggage beyond the essential I regard as *impedimenta*, and believe in the wisdom of Titian Peale,[25] who, when preparing for an exploring tour around the world, purchased—a tin cup. For the sake of poor devils condemned to cold winters, I give in detail my dress, the result of much trial, and, I think, nearly perfect. Here it is, from tip to toe.

1. Feet. A pair of cotton socks (lisle thread) covered by a pair of ribbed woolen stockings rising above the knee and half way up the thigh. Over these a pair of Esquimaux water-proof boots, lined by a sock of dog-skin, the hair inside; the leg of dressed seal-hide; a sole with the edges turned up, and crimped so as to form a water-tight cup; the furred edge of a dogskin sock inserted as a lining and some clean straw laid smoothly at the bottom, which forms the elastic cushion on which you tread.

2. Legs. A pair of coarse woolen drawers, and a pair of seal-skin breeks over them, stitched with reindeer tendon.

3. Chest. A jumper or short coat, double, of seal-skin and reindeer fur. This invaluable article I got at Disco on my fur journey, obtaining a good number besides for men and officers. It consists of an innerhooded shirt of reindeer-skin with the hair inside, reaching as far as the upper ridge of the hips, so as to allow free

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[24] A member of the expedition who later joined Dr. Kane in his second expedition to the Arctic.

[25] Titian Ramsey Peale was born in Philadelphia in 1800 and died there March 13, 1885. He was the son of Rembrandt Peale (1778–1860), the artist, and a grandson of Charles Wilson Peale (1741–1827). Like his father he was a gifted painter, but he was more interested in the study of natural history and travel. He was a member of the Philadelphia Academy of Natural Sciences and accompanied the South Sea exploring expedition in 1838–42, under Lieutenant Charles Wilkes, as naturalist. He drew several of the plates illustrating animal life, which appear in the printed report of that exploration. From 1849 to 1872 he was an examiner in the Patent Office at Washington. He was the author of "Mammalia and Ornithology" (1848). Joseph Sabin says that the volume "was suppressed and is of the greatest rarity."

swing to the legs, and fitting about the throat very closely. It is drawn on like the shirt, and, except at the neck, is perfectly loose and unbinding.

4. Head. Our people generally wear fur caps. I wear an ear-ridge, a tiara, to speak heroically, of wolf-skin. Excellent is this Mormon fur! Leaving the entire poll bare to the elements, it guards the ears and forehead effectually; in any ordinary state of the wind above −15°, I am not troubled with the cold. Before I resorted to this, my cap was full of frozen water, stiff and uncomfortable, all the condensation turning to ice the moment I uncovered. When the weather is very cold, I up hood; when colder, say −40°, with a middling breeze (quite cold enough, I assure you) I wear an elastic silk night-cap in addition, one of a pair forced on me by a certain brother of mine as I was leaving New York, drawn over my head and face, and lined with a mask of wolf-skin. To prevent excessive condensation, I cut only two eye-holes, and leave a large aperture below the point of the nose for talking and breathing. A grim-looking object is this wolf-skin mask, its openings lined with water-proof oiled silk.

The only changes in the above are a pair of cloth pants for fur, when the thermometer strays above −15°, and a pair of heavy woolen leggins, drawn over my fur pants and worn, stocking fashion, within my boots, in windy weather, when we get down to −30° or thereabouts. A long waist-scarf worn like the kummerbund of the Hindoos is a fine protection while walking, to keep the cold from intruding at the pockets and waist; it consummates, as it floats martially on the breeze, the grotesque harmonies of my attire.

The following description of arctic plant growth which Dr. Kane noted on one of his rambles indicates his interest in botany.

Strange as it seemed, on the immediate level of snow and ice, the constant infiltrations, aided by solar reverberation, had made an Arctic garden-spot. The surface of the moss, owing, probably, to the extreme alternations of heat and cold, was divided into regular hexagons and other polyhedral figures, and scattered over these, nestling between the tufts, and forming little groups on their southern faces, was a quiet, unobtrusive community of Alpine flowering plants. The weakness of individual growth allowed no ambitious species to overpower its neighbor, so that many families were crowded together in a rich flower-bed. In a little space I could cover with my pea-jacket, the veined leaves of the Pyrola were peeping out among chickweeds and saxifrages, and sorrel and Ranunculus. I even found a poor gentian, stunted and reduced, but still, like everything around it, in all the perfection of miniature proportions.

As this mossy parterre approached the rocky walls that hemmed it in, tussocks of sedges and coarse grass began to show themselves, mixed with heaths and birches; and still further on, at the margin of the horseshoe, and fringing its union with the stupendous piles of débris, came an annulus of Arctic shrubs and trees.

Shrubs and trees! the words recall a smile, for they only typed those natives of another zone. The poor things had lost their uprightness, and learned to escape the elements by trailing along the rocks. Few rose above my shoes, and none above my ankles; yet shady alleys and heaven-pointing avenues could not be more impressive examples of creative adaptation. Here I saw the bleaberry (Vaccinium uliginosum) in flower and in fruit: I could cover it with a wine-glass; the wild honeysuckle (Azalea procumbens) of our Pennsylvania woods: I could stick the entire plant in my button-hole; the Andromeda tetragona, like a green marabou feather.

Strangest among these transformations came the willows. One, the Salix herbacea, hardly larger than a trefoil clover; another, the Salix glauca, like a young althea, just bursting from its seed. A third, the Salix lanata, a triton among these boreal minnows, looked like an unfortunate garter-snake bound here and there by claw-like radicles which, unable to penetrate the inhospitable soil, had spread themselves out upon the surface, traps for the broken lichens and fostering moss which formed its scanty mould.

I had several opportunities, while taking sextant elevations of the headlands, to measure the moss beds of this cove, both by sections where streams from the lake had left denuded faces, and by piercing through them with a pointed staff. These mosses formed an investing mould, built up layer upon layer, until it had attained a mean depth of five feet. At one place, near the sea line, it was seven feet; and even here the slow processes of Arctic decomposition had not entirely destroyed the delicate radicles and stems. The fronds of the pioneering lichens were still recognizable, entangled among the rest.

Yet these little layers represented, in their diminutive stratification, the deposits of vegetable periods. I counted sixty-eight in the greatest section. Those chemical processes by which nature converts our autumnal leaves into pabulum for future growths work slowly here.

The monotony of life on board the ice-bound vessels may be judged from the following, written by Dr. Kane at the time for the edification of his brother:

February 11, Wednesday. Day very hazy, and nothing to interrupt its monotony. It requires an effort to bear up against this solemn transit of unvarying time.

I will show you how I spend one of these days: that is, all of them. It is the only palliation I can offer for my meagerness of incident. As for the study we used to talk about, even you, terrible worker as you are, could not study in the Arctic regions.

Within a little area, whose cubic contents are less than father's library, you have the entire abiding-place of thirty-three heavily-clad men. Of these I am one. Three stoves and a cooking galley, four Argand and three bear-fat lamps burn with the constancy of a vestal shrine. Damp furs, soiled woolens, cast-off boots, sick men, cookery, tobacco-smoke and digestion are compounding their effluvia around and within me. Hour by hour, and day after day, without even a bunk to retire to or a blanket-curtain to hide me, this and these make up the reality of my home.

Outside, grim death, in the shape of −40°, is trying, most foolishly I think, to chill the energy of these his allies. My bedding lies upon the bare deck right under the hatch. A thermometer, placed at the head of my cot gives a mean temperature of 64°; at my feet, under the hatchway, +16° to −4°: ice at my feet, vapor at my head. The sleeping-bunks aft range from 70° to 93°; those forward, regulated by the medical officer, from 60° to 65°.

We rise, the crew at six bells, seven o'clock, and the officers at seven bells, half an hour later. Thus comports himself your brother. He sits up in the midst of his blankets, and drinks a glass of cold water; eyes, nose, and mouth chippy with lampblack and undue evaporation. Oh! how comforting this water is! That over, a tin basin, in its turn, is brought round by Morton, mush-like with snow; and in this mixture, by the aid of a hard towel, with a daily regularity that knows no intermission, he goes over his entire skeleton frictionizing.

This done, comes the dressing, the two pairs of stockings, the three under-shirts, and fur outer robing, and the seal-skin boots; and then, with a hurried cough of disgust and semi-suffocation, he is on deck. There the air, pure and sharply cold, now about 26° or 30°, last week 40° below zero, braces you up like peach and honey in a Virginia fog, or a tass of mountain dew in the Highlands. Then to breakfast. Here are the mess, with the fresh smell of overnight undisturbed, and on our table griddle cakes of Indian meal, hominy, and mackerel with hot coffee and good appetites, we fall to manfully.

Breakfast over, on go the furs again; and we escape from the accumulating fumes of "servants' hall," walking to floes, or climbing to the tops, till we are frozen enough to go below again. One hour spent now in an attempt at study, vainly enough, poor devil! But he does try, and what little he does is done then. By half past ten our entire little band of officers are out upon the floes for a bout at anti-scorbutic exercise, a game of romps: first foot-ball, at which we kick till our legs ache; next sliding, at which we slide until we can slide no more; then off, with carbine on shoulder, and Henri[26] as satellite, on an ice-tramp.

Coming back, dinner lags at two. Then for the afternoon: God spare the man who can with unscathed nose stand the effluvium. But night follows soon, and with it the saddening question, What has the day achieved? And then we stretch ourselves out under the hatches, and sleep to the music of our thirty odd roommates.

The scurvy has at last fairly extended to our own little body, the officers. Pains in the limbs, and deepseated soreness of the bones, seem to be its most common demonstration. The complaint is of "a sort of tired feeling," or as if "they had had a beating." Our usual supper, the sauer-kraut, has become excessively popular. Even the abused bear is not quite as bad as it was.

The crew have been snow-rubbing their blankets. The snow is so fine and sand-like, that under these low Arctic temperatures it acts mechanically, and is an effectual cleanser. Withal, if you beat it well out of the tissue, it is not a damp application. The only trouble is that, on taking the bedding below, the condensation covers it with dew-drops. With drying-lines on the lower decks, the resort would be excellent.

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[26] A Frenchman who accompanied the expedition as cook.

February 22, Saturday. "Some things can be done as well as others"; so at least Sam Patch said, when he scrambled up after his jump at Niagara. I walked myself into a comfortable perspiration this morning, with the thermometer at −42°, seventy-four degrees below the freezing point. My walk was a long one. When about three miles from the brig a breeze sprang up; it was very gentle; but instantly the sensation came upon me of intense cold. My beard, coated before with massive icicles, seemed to bristle with increased stiffness. Henri, who walked ahead, began to suffer: his nose was tallow white. Before we had rubbed it into circulation, my own was in the same condition; and an unfortunate hole in the back of my mitten stung like a burning coal. We are so accustomed to cold that I did not suffer during our walk back, though it was more than an hour of hummock crossing.

The sensation most unendurable of these extremely low temperatures is a pain between the eyes and over the forehead. This is quite severe. It reminded me of a feeling which I have had from over-large quantities of ice-cream or ice-water held against the roof of the mouth. I reached the brig in a fine glow of warmth, having skated, slid, and made the most of my time in the open air.

An increased disposition to scurvy shows itself. Last week twelve cases of scorbutic gums were noted at my daily inspections. In addition to these I have two cases of swelled limbs and extravasated blotches, with others less severely marked, from the same obstinate disease. The officers too, the captain, Mr. Lovell, and Mr. Murdaugh, complain of stiff and painful joints and limbs, with diarrhoea and impaired appetite; the doctor like the rest. At my recommendation, the captain has ordered an increased allowance of fresh food, to the amount of two complete extra daily rations per man, with potatoes, sauer-kraut, and stewed apples; and we have enjoined more active and continued daily exercise, more complete airing of bedding &c. I have commenced the use of nitro-muriatic acid, as in syphilitic and mercurial cases, by external friction.

The state of health among us gives me great anxiety, and not a little hard work. Quinine, the salts of iron, &c., &c., are in full requisition. For the first time I am without a hospital steward.

It is Washington's birthday, when "hearts should be glad"; but we have no wine for the dinner-table, and are too sick for artificial merriment without it. Our crew, however, good patriotic wretches, got up a theatrical performance, "The Irish Attorney"; Pierce O'Hara taken by the admirable Bruce, our Crichton. The ship's thermometer outside was at −46°. Inside, among audience and actors, by aid of lungs, lamps, and housings, we got as high as 30° below zero, only sixty-two below the freezing point! probably the lowest atmospheric record of a theatrical representation.

It was a strange thing altogether. The condensation was so excessive that we could barely see the performers; they walked in a cloud of vapor. Any extra vehemence of delivery was accompanied by volumes of smoke. The hands steamed. When an excited Thespian took off his hat, it smoked like a dish of potatoes. When he stood expectant, musing a reply, the vapor wreathed in little curls from his neck.

Soon after this the two vessels were caught in the ice. The pressure forced them above the general level of the floe, the Advance resting with sloping decks upon high ice blocks. The crew of the Resolute were moved over to the larger vessel and the expedition made preparation for the long arctic night. Early in June, 1851, the ice showed signs of breaking. The men of the Resolute returned to their vessel and preparations were made to escape from their icy prison. The breakup came on Sunday, June eighth. On that day Dr. Kane made the following note in his journal:

June 8, Sunday. Even keel again! Once more floating ship-fashion, in a ship's element. It was between twelve and one o'clock this morning. Murdaugh went down upon the fragment, which was still adhering to our starboard side. He had hardly rested his weight upon it, when, with certain hurried, scarcely premonitory grindings, it cleared itself. He had barely time

> to scramble up the brig's side, tearing his nails in the effort, before, with crash and turmoil, it tumbled up to the surface, letting us down once more into clear water. When I reached the deck, I could hardly realize the level, horizontal condition of things, we have been accustomed to this up and down hill work so long.
>
> 9 P.M. At 1 o'clock P.M. the wind freshened from the northward, enough to make sail. We cast off, and renewed the old time process of boring, standing irregularly among the fragments, southward and eastward. We received some heavy bumps, but kept under weigh until 6 P.M., when an impenetrable ice fog caused us to haul up to a heavy floe, to which we are now fast by three anchors. We estimate our progress at six miles. The Rescue is not visible.
>
> From the heavy floe to which we are secured we obtained fresh thawed water. This is the first time since the 15th of September that I have drunk water liquefied without fire. Eight months and twenty-four days: think of that, dear strawberry and cream eating family!

The expedition remained in the Arctic during that summer. Heading south as indications of winter were noted, the two vessels reached New York on September 30, 1851.

Dr. Kane spent the winter of 1851–52 in preparing his account of the expedition for publication. The book was issued by the Harpers in July, 1853. As soon as his manuscript had gone to press, he set out on a lecture tour, having in view the financing of a private expedition which was to depart for the North in the spring of 1853.

Lady Franklin had not yet given up hope of finding the lost explorers. The British government planned to examine the region where Sir John Franklin's ships were supposed to be, more vigorously than ever, and Dr. Kane was eager to participate in the search. On the seventh of May, 1852, he wrote to Mr. Grinnell:

> The letters of Lady Franklin and Miss Cracroft (her niece) move me. Their views coincide with my own. I am convinced that an expedition could be carried out under private auspices without feeling the absence of an artificial discipline. If you will send for Penny, I will act either conjointly with him, or in any other position in which I can be of use . . . The feelings which lead me to this offer forbid the intrusion of any thought of technical dignity. He may have my buttons, and I will go as cook. . . . The book will be done in the middle of June: we might be off before the 1st of July. . . You ought not, and are not, to advance one cent. The great tax upon you will be the Advance. I will go strenuously to work and raise the funds, giving my own salary as a start.

In the afternoon of the same day he wrote again:

> Upon reconsidering my letter of this morning, it seems to me that if you knew of any good, practical man who could act as sailing-master, there would be no necessity for the delay and expense of Penny; and I could readily undertake the exploration proposed.

He did not get off that season. His efforts through the winter and spring to accomplish the wish were ineffectual. The book was not finished in June, his health had badly failed him but he did not despair of eventual success. In a personal interview with the Honorable John P. Kennedy, Secretary of the Navy, he unfolded the plan and purposes of his second arctic voyage. The Secretary, perceiving that even with all the liberality of Mr. Grinnell, the outfit would be very limited, and believing that he could aid it by some valuable additions through the Navy Department, suggested to Dr. Kane that he be placed on special duty in connection with the expedition. This status enabled Dr. Kane to draw full pay and to take advantage of many facilities available in the Navy Department.

Orders were accordingly issued to him on November 27, 1852, and in time ten men of the Navy were placed under his command, with rations and medical supplies for them. The Geographical Society of New York, the Smithsonian Institute and the Naval Observatory contributed scientific apparatus. Dr. Kane contributed twenty months of unremitting toil, his own pay, and the proceeds of the lectures which he had delivered. Mr. George Peabody, an American gentleman then residing in London, contributed ten thousand dollars; Mr. Grinnell gave the brig and a number of scientific associations proffered help.

Dr. Kane realized the value of foresight to an arctic explorer and he accumulated a mass of details, page upon page of memorandums and calculations relative to the prospective voyage, and spent tedious hours collecting and inspecting supplies and gear. His plans were perfected with care, and letters on file in the Navy Department reveal the various changes he made in the detail of his personnel to effect harmony in his organization.

About the middle of April while busy in New York with the details of the expedition, he was taken ill and for three weeks was confined to bed in the home of Mr. Grinnell. Writing to Mr. Kennedy on the nineteenth of May, however, he says: "After a cruel attack of inflammatory rheumatism, and three weeks of complete helplessness on my beam-ends, I find myself ready to start."

Dr. Kane sailed from the New York Navy Yard in the Advance on May 30, 1853, and "passing slowly on to the narrows amid salutes and cheers of farewell, cast off from the steam tug and put to sea."

The party under his command numbered eighteen and consisted of Henry Brooks, First Officer, John Wall Wilson, James McGary, George Riley, William Morton, Christian Ohlsen, Henry Goodfellow, August Sontag, Dr. Isaac S. Hayes, Surgeon, Amos Bonsall, George Stephenson, George Whipple, William Godfrey, John Blake, Jefferson Baker, Peter Schubert and Thomas Hickey.

Ten of this little party belonged to the United States Navy, two of them, Brooks and Morton, had been Dr. Kane's associates in the first expedition, "gallant and trustworthy men, both of them, as ever shared the fortunes or claimed the gratitude of a commander."

The equipment of the vessel was simple. "It consisted of little else than a quantity of rough boards to serve for housing over the vessel in winter, some tents of India-rubber and canvas, and several carefully built sledges."

The store of provisions "was chosen with little regard to luxury." It consisted of "some two thousand pounds of well-made pemmican, a parcel of Borden's meat biscuit, some packages of desiccated potatoes, some pickled cabbage and a liberal quantity of American dried fruits and vegetables, salt beef and pork of the Navy ration, hard biscuit and flour, and a very moderate supply of liquors."

With the exception of a stop at St. John's, Newfoundland, where some dogs and fresh beef were acquired, the party reached Baffin's Bay without incident. The harbor of Fiskenaes on the coast of Greenland was reached on the first of July. Here an Eskimo hunter, Hans Christian, joined the expedition.

Ten days later the Advance arrived at Sukkertoppen, which nestles at the foot of Sukkertop, or sugar-loaf, a noted mountainous landmark on the coast. Here furs and a stock of fish were purchased. On July seventeenth, the vessel reached Proven where Dr. Kane again met the acquaintances of a previous visit. At this place the furs were made up into suitable garments. Between Proven and Upernavik more dogs were purchased at the various settlements along the coast. Yotlik, the farthest point of Danish colonization was finally passed. Beyond this outpost, save for a few headlands indicated on the charts, the coast at that time was unknown.

Hampered by gales, fog and floating ice, the vessel made her way past Melville Bay. By August sixth, the Advance had come within sight of Cape Alexander and Cape Isabella, the headlands of Smith's Strait. "They have been until now," wrote Kane, "the Arctic pillars of Hercules and they look down on us as if they challenged our right to pass. Even the sailors are impressed as we move under their dark shadow." Having deposited a boat with a supply of stores and erected a beacon on the mainland near the entrance of Smith Strait, the party set out again toward the north, "beating against wind and tide."

In a few days masses of impacted ice were encountered. While attempting to penetrate this ice a gale from the south brought adventure to the little party.

August 20, Saturday, 3½ P.M. By Saturday morning it blew a perfect hurricane. We had seen it coming, and were ready with three good hawsers out ahead and all things snug on board.

Still it came on heavier and heavier, and the ice began to drive more wildly than I thought I had ever seen it. I had just turned in to warm and dry myself during a momentary lull and was stretching myself out in my bunk, when I heard the sharp twanging snap of a cord. Our six-inch hawser had parted and we were swinging by the two others; the gale roaring like a lion to the southward.

Half a minute more, and "twang, twang!" came a second report. I knew it was the whale-line by the shrillness of the ring. Our noble ten-inch manila still held on. I was hurrying my last sock into its sealskin boot, when McGary came waddling down the companion-ladders: "Captain Kane, she won't hold much longer: it's blowing the devil himself, and I am afraid to surge."

The manila cable was proving its excellence when I reached the deck; and the crew, as they gathered round me, were loud in its praises. We could hear its deep Æolian chant, swelling through all the rattle of the running-gear and moaning of the shrouds. It was the death-song! The strands gave way, with the noise of a shotted gun; and in the smoke that followed their recoil we were dragged out by the wild ice, at its mercy.

We steadied and did some petty warping and got the brig a good bed in the rushing drift but it all came to nothing. We then tried to beat back through the narrow ice-clogged water-way, that was driving, a quarter of a mile wide, between the shore and the pack. It cost us two hours of hard labor, I thought skilfully bestowed; but at the end of that time we were at least four miles off, opposite the great valley in the centre of Bedevilled Reach. Ahead of us, farther to the north, we could see the strait growing still narrower and the heavy ice-tables grinding up and clogging it between the shore-cliffs on one side and the ledge on the other. There was but one thing left for us: to keep in some sort the command of the helm, by going freely where we must otherwise be driven. We allowed her to scud under a reefed foretopsail; all hands watching the enemy, as we closed, in silence.

At seven in the morning, we were close upon the piling masses. We dropped our heaviest anchor with the desperate hope of winding the brig; but there was no withstanding the ice-torrent that followed us. We had only time to fasten a spar as a buoy to the chain, and let her slip. So went our best bower!

Down we went upon the gale again, helplessly scraping along a lee of ice seldom less than thirty feet thick; one floe, measured by a line as we tried to fasten to it, more than forty. I had seen such ice only once before and never in such rapid motion. One upturned mass rose above our gunwale, smashing in our bulwarks, and depositing half a ton of ice in a lump upon our decks. Our stanch little brig bore herself through all this wild adventure as if she had a charmed life.

But a new enemy came in sight ahead. Directly in our way, just beyond the line of floe-ice against which we were alternately sliding and thumping, was a group of bergs. We had no power to avoid them; and the only question was whether we were to be dashed in pieces against them or whether they might not offer us some providential nook of refuge from the storm. But as we neared them we perceived that they were at some distance from the floe-edge and separated from it by an interval of open water. Our hopes rose, as the gale drove us toward this passage, and into it; and we were ready to exult, when from some unexplained cause, probably an eddy of the wind against the lofty ice-walls, we lost our headway. Almost at the same moment we saw that the bergs were not at rest that with a momentum of their own they were bearing down upon the other ice and that it must be our fate to be crushed between the two.

Just then a broad sconce-piece or low water-washed berg came driving up from the southward. The thought flashed upon me of one of our escapes in Melville Bay;[27] and as the sconce moved rapidly close alongside us, McGary managed to plant an anchor on its slope and hold on to it by a whale-line. It was an anxious moment. Our noble tow-horse, whiter than the pale horse that seemed to be pursuing us, hauled us bravely on; the spray dashing over his windward flanks and his forehead ploughing up the lesser ice as if in scorn. The bergs encroached upon us as we advanced: our channel narrowed to a width of perhaps forty feet: we braced the yards to clear the impending ice walls.

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[27] During his first expedition.

. . . We passed clear; but it was a close shave, so close that our port quarter-boat would have been crushed if we had not taken it in from the davits, and found ourselves under the lee of a berg, in a comparatively open lead. Never did heart-tried men acknowledge with more gratitude their merciful deliverance from a wretched death. . .

The day had already its full share of trials; but there were more to come. A flaw drove us from our shelter and the gale soon carried us beyond the end of the lead. We were again in the ice, sometimes escaping its onset by warping, sometimes forced to rely on the strength and buoyancy of the brig to stand its pressure, sometimes scudding wildly through the half-open drift. Our jib-boom was snapped off in the cap; we carried away our barricade stanchions, and were forced to leave our little Eric[28] with three brave fellows and their warps, out upon the floes behind us.

A little pool of open water received us at last. It was just beyond a lofty cape that rose up like a wall, and under an iceberg that anchored itself between us and the gale. And here, close under the frowning shore of Greenland, ten miles nearer the Pole than our holding-ground of the morning, the men have turned in to rest.

I was afraid to join them, for the gale was unbroken and the floes kept pressing heavily upon our berg, at one time so heavily as to sway it on its vertical axis toward the shore, and make its pinnacle overhang our vessel. My poor fellows had but a precarious sleep before our little harbor was broken up. They hardly reached the deck when we were driven astern, our rudder splintered, and the pintles torn from their boltings.

Now began the nippings. The first shock took us on our port-quarter; the brig bearing it well and, after a moment of the old-fashioned suspense, rising by jerks handsomely. The next was from a veteran floe, tongued and honeycombed, but floating in a single table over twenty feet in thickness. Of course, no wood or iron could stand this; but the shoreward face of our iceberg happened to present an inclined plane, descending deep into the water; and up this the brig was driven, as if some great steam screw-power was forcing her into a dry dock.

At one time I expected to see her carried bodily up its face and tumbled over on her side. But one of those mysterious relaxations, which I have elsewhere called the pulses of the ice, lowered us quite gradually down again into the rubbish, and we were forced out of the line of pressure toward the shore. Here we succeeded in carrying out a warp and making fast. We grounded as the tide fell and would have heeled over to seaward but for a mass of detached land-ice that grounded alongside of us and, although it stove our bulwarks as we rolled over it, shored us up.

I could hardly get to my bunk, as I went down into our littered cabin on the Sunday morning after our hard-working vigil of thirty-six hours. Bags of clothing, food, tents, India-rubber blankets, and the hundred little personal matters which every man likes to save in a time of trouble, were scattered around in places where the owners thought they might have them at hand. The pemmican had been on deck, the boats equipped and everything of real importance ready for a march, many hours before.

During the whole of the scenes I have been trying to describe, I could not help being struck by the composed and manly demeanor of my comrades. The turmoil of ice under a heavy sea often conveys the impression of danger when the reality is absent, but in this fearful passage, the parting of our hawsers, the loss of our anchors, the abrupt crushing of our stoven bulwarks, and the actual deposit of ice upon our decks, would have tried the nerves of the most experienced icemen. All, officers and men, worked alike. Upon each occasion of collision with the ice which formed our lee-coast, efforts were made to carry out lines, and some narrow escapes were incurred by the zeal of the parties leading them into positions of danger. Mr. Bonsall avoided being crushed by leaping to a floating fragment; and no less than four of our men at one time were carried down by the drift, and could only be recovered by a relief party after the gale had subsided.

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[28] A small red painted boat facetiously called by the crew Eric the Red.

> As our brig, borne on by the ice, commenced her ascent of the berg, the suspense was oppressive. The immense blocks piled against her, range upon range, pressing themselves under her keel and throwing her over upon her side, till urged by the successive accumulations she rose slowly and as if with convulsive efforts along the sloping wall. Still there was no relaxation of the impelling force. Shock after shock jarring her to her very center, she continued to mount steadily on her precarious cradle. But for the groaning of her timbers and the heavy sough of the floes, we might have heard a pin drop. And then, as she settled down into her old position, quietly taking her place among the broken rubbish, there was a deep-breathing silence, as though all were waiting for some signal before the clamor of congratulation and comment could burst forth.

It was not until the twenty-second of August, that the storm abated and the absent men were once more back on the ship.

The following extracts from Dr. Kane's journal show the difficulties encountered and his ability as a commander:

> August 23, Tuesday. We tracked[29] along the ice belt for about one mile . . .
>
> Our latitude . . . is 78° 41′. We are farther north, therefore, than any of our predecessors, except Parry on his Spitzbergen foot-tramp.
>
> August 24, Wednesday. We have kept at it, tracking along, grounding at low water, but working like horses when the tides allowed us to move. . . It has snowed hard since 10 P.M. of yesterday, and the sludge fills up the interstices of the floes.
>
> August 25, Thursday. The snow of yesterday has surrounded us with a pasty sludge; but the young ice continues to be our most formidable opponent. The temperatures of the 22nd and 23d were 27° and 30° Fahrenheit. I do not like being caught by winter before attaining a higher northern latitude than this, but it appears almost inevitable.
>
> August 26. Friday. My officers and crew are staunch and firm men but the depressing influences of want of rest, the rapid advance of winter and, above all, our slow progress, make them sympathize but little with this continued effort to force a way to the north. One of them, an excellent member of the party, volunteered an expression of opinion this morning in favor of returning to the south and giving up the attempt to winter. . .
>
> It is unjust for a commander to measure his subordinates in such exigencies by his own standard. The interest which they feel in an undertaking is of a different nature from his own. With him there are always personal motives, apart from official duty, to stimulate effort. He receives, if successful, too large a share of the credit, and he justly bears all the odium of failure.
>
> An apprehension, I hope a charitable one, of this fact leads me to consider the opinions of my officers with much respect. I called them together at once, in a formal council, and listened to their views in full. With but one exception, Mr. Henry Brooks, they were convinced that a further progress to the north was impossible, and were in favor of returning southward to winter.
>
> Not being able conscientiously to take the same view, I explained to them the importance of securing a position which might expedite our sledge journeys in the future; and after assuring them that such a position could only be attained by continuing our efforts, announced my intention of warping toward the northern headland of the bay. "Once there, I shall be able to determine from actual inspection the best point for setting out on the operations of the spring; and at the nearest possible shelter to that point I will put the brig into winter harbor." My comrades received this decision in a manner that was most gratifying and entered zealously upon the hard and cheerless duty it involved.
>
> The warping began again, each man, myself included, taking his turn at the capstan. The ice seemed less heavy as we penetrated into the recess of the bay; our tracklines and shoulder-belts replaced the warps. Hot coffee was served out; and, in the midst of cheering songs, our little brig moved off briskly.

After many days of toil, the vessel was brought to a little harbor, later called Rensselaer Harbor, which Dr. Kane selected as the winter quarters of his party. The brig was warped in between a few rocky islands which afforded a perfect shelter from the outside ice, a location which by a decree of fate she was destined never to leave.

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[29] This was done by attaching a stout line to the vessel by means of which the crew towed her along the edge of the ice.

All hands were soon busy making preparations for the rapidly approaching winter. The thermometer had fallen by the tenth of September to 14°; and the young ice had cemented the floes so that the crew could walk and sledge around the brig. On that day Kane wrote: "We have plenty of responsible work before us. The long night in which no man can work is close at hand; in another month we shall lose the sun." The hold had to be unstowed and its contents deposited in a storehouse which had been erected on one of the islands. Food must be prepared for the winter diet. The dogs must be trained to draw the sledges. The region must be explored, an observatory must be erected to lodge the astronomical instruments, and the preliminary arrangements for provision depots along the Greenland coast, must be made. He proposed to arrange three of them at intervals pushing them as far forward as he could. His plans for future search were directly dependent upon the success of these operations of the fall. With a chain of provision-depots along the coast of Greenland he could readily extend his travel by aid of the dogs.

On September twentieth, Tuesday, seven men drawing a sledge laden with packages of pemmican and their camping equipment set out and traveled north to a point on the coast in latitude of about 79° 50′ where further progress was stopped by the Great Humboldt Glacier, established three caches at intervals and returned safely, after sundry adventures, to the Advance.

The winter which was exceptionally cold, the thermometer outside the vessel often reaching 49°F., was passed without incident although provisions became scanty and scurvy attacked many members of the party.

Early in March Dr. Kane sent an advance party to deposit supplies north of the third cache made in the fall of the previous year. This party met with disaster which necessitated an unbroken march of twenty-one hours on the part of the relief expedition headed by Dr. Kane to rescue it. The trip was arduous but the men were returned to the ship safely.

This rescue party was away from the ship seventy-two hours and traveled between eighty and ninety miles, most of the way dragging a heavy sledge. The expedition resulted in the disability of several and the death of two members, Jefferson Baker and Peter Schubert.

In April a band of Eskimos discovered Kane's winter quarters and made several friendly visits. From them he obtained some dogs and they in turn stole whatever they could lay their hands upon. Later they were instrumental in assisting the members of the expedition to escape the fate of so many men who have succumbed in the frozen reaches of the North.

When May came, the short season available for Arctic search was at hand. The effectiveness of the force was much diminished, four able-bodied and six disabled men must be left on the brig, the commander and seven men only were left for work upon the ice. Dr. Kane wrote:

> I am going this time to follow the ice belt (along the coast) to the great glacier of Humboldt, and there load up with pemmican from our cache of last October. From this point I expect to stretch along the face of the glacier inclining to the west of north and make an attempt to cross the ice to the American side. Once on smooth ice near this shore, I may pass to the west and enter the large indentation whose existence I can infer with nearly positive certainty. In this I may find an outlet and determine the state of things beyond the ice-clogged area of this bay.
>
> I take with me pemmican and bread and tea, a canvas tent, five feet by six, and two sleeping bags of reindeer skin. The sledge has been built on board. It is very light, of hickory, and but nine feet long. Our kitchen is a soup kettle for melting snow and making tea, arranged so as to boil with either lard or spirits.

On April 26, Dr. Kane dispatched an advance party with one sledge and the following day with one companion he left the ship and headed north. Of this expedition Dr. Kane said:

> The journey was an arduous one to be undertaken, even under the most favoring circumstances and by unbroken men. It was to be the crowning expedition of the campaign, to attain the ultima Thule of the Greenland shore, measure the waste that lay between it and the unknown West, and seek round the farthest circle of the ice for an outlet to the mysterious channels beyond. The scheme could not be carried out in its details. Yet it was prosecuted far enough to indicate what must be our future fields of labor, and to determine many points of geographical interest.

After nearly a month's arduous progress, the party found themselves before the great Humboldt Glacier whose "face of glistening ice" sweeps in a curve sixty miles in length from Cape Agassiz to Cape Forbes. Of this journey Dr. Kane wrote:

> It is now the 20th of May, and for the first time I am able, propped up by pillows and surrounded by sick messmates, to note the fact that we have failed again to force the passage to the north.
>
> Godfrey and myself overtook the advance party under McGary two days after leaving the brig. Our dogs were in fair travelling condition, and, except snow-blindness, there seemed to be no drawback to our efficiency. In crossing Marshall Bay, we found the snow so accumulated in drifts, that, with all our efforts to pick out a track, we became involved; we could not force our sledges through. We were forced to unload and carry forward the cargo on our backs, beating a path for the dogs to follow in. In this way we plodded on to the opposite headland, Cape William Wood, where the waters of Mary Minturn River, which had delayed the freezing of the ice, gave us a long reach of level travel. We then made a better rate; and our days' marches were such as to carry us by the 4th of May nearly to the glacier.
>
> This progress, however, was dearly earned. As early as the 3d of May, the winter's scurvy reappeared painfully among our party. As we struggled through the snow along the Greenland coast we sank up to our middle and the dogs, floundered about, were so buried as to preclude any attempts at hauling. This excessive snow-deposit seemed to be due to the precipitation of cold condensing wind suddenly wafted from the neighboring glacier; for at Rensselaer Harbor we had only four inches of general snow depth. It obliged us to unload our sledges again, and carry their cargo, a labor which resulted in dropsical swellings with painful prostration. Here three of the party were taken with snow-blindness, and George Stephenson had to be condemned as unfit for travel altogether, on account of chest-symptoms accompanying his scorbutic troubles. On the 4th, Thomas Hickey also gave in, although not quite disabled for labor at the tracklines.
>
> Perhaps we would still have got on; but, to crown all, we found that the bears had effected an entrance into our pemmican-casks, and destroyed our chances of reinforcing our provisions at the several caches. This great calamity was certainly inevitable; for it is simple justice to the officers under whose charge the provision-depots were constructed, to say that no means in their power could have prevented the result. The pemmican was covered with blocks of stone which it had required the labor of three men to adjust; but the extraordinary strength of the bear had enabled him to force aside the heaviest rocks, and his pawing had broken the iron casks which held our pemmican literally into chips. Our alcohol-cask, which it had cost me a separate and special journey in the late fall to deposit, was so completely destroyed that we could not find a stave of it.
>
> Off Cape James Kent, about eight miles from "Sunny George," while taking an observation for latitude, I was myself seized with a sudden pain and fainted. My limbs became rigid and certain obscure tetanoid symptoms of our late winter's enemy disclosed themselves. In this condition I was unable to make more than nine miles a day. I was strapped upon the sledge, and the march continued as usual; but my powers diminished so rapidly that I could not resist even the otherwise comfortable temperature of 5° below zero. My left foot becoming frozen up to the metatarsal joint, caused a vexatious delay; and the same night it became evident that the immovability of my limbs was due to dropsical effusion.
>
> On the 5th, becoming delirious, and fainting every time that I was taken from the tent to the sledge, I succumbed entirely. I append the

report of our surgeon[30] made upon my return. This will best exhibit the diseased condition of myself and party, and explain, in stronger terms that I can allow myself to use, the extent of my efforts to contend against it.

My comrades would kindly persuade me that even had I continued sound we could not have proceeded on our journey. The snows were very heavy and increasing as we went; some of the drifts perfectly impassable, and the level floes often four feet deep in yielding snow. The scurvy had already broken out among the men, with symptoms like my own; and Morton, our strongest man, was beginning to give way. It is the reverse of comfort to me that they shared my weakness. All that I should remember with pleasurable feeling is that to five brave men, Morton, Riley, Hickey, Stephenson and Hans, themselves scarcely able to travel, I owe my preservation. They carried me back by forced marches, after caching our stores and India-rubber boat near Dallas Bay, in lat. 79°.5 N., long. 66° W.

I was taken into the brig on the 14th. Since then, fluctuating between life and death, I have by the blessing of God reached the present date, and see feebly in prospect my recovery.

As soon as Dr. Kane had recovered enough to be aware of his failure he began to devise means for remedying it, but he found the resources of the party shattered and only three men able to do full duty.

The quarter to which our remaining observations were to be directed lay to the north and east of the Cape Sabine of Captain Inglefield. The interruption our progress along the coast of Greenland had met from the Great Glacier, and the destruction of our provision caches by the bears, left a blank for us of the entire northern coast-line. It was necessary to ascertain whether the furthermost expansion of Smith's Strait did not find an outlet in still more remote channels; and this became our duty the more plainly, since our theodolite had shown us that the northern coast trended off to the eastward, and not to the west, as our predecessor had supposed.

I determined to trust almost entirely to the dogs for our travel in the future and to send out parties of exploration, one after the other, as rapidly as the strength and refreshing of our team would permit.

Dr. Hayes was selected for [the first party] and I satisfied myself that with a little assistance from my comrades I could be carried round to the cots of the sick and so avail myself of his services in the field.

He was a perfectly fresh man, not having yet undertaken a journey. I gave him a team and my best driver, William Godfrey. He is to cross Smith's Straits and make as near as may be a straight course for Cape Sabine [on the American shore].

Dr. Hayes left the brig on the twentieth of May. While he was absent from the ship, Hans, the Eskimo hunter, shot a number of ptarmigan, rabbits, reindeer and seals which had a beneficial effect upon the scurvy.

Dr. Hayes and his companion returned to the ship on the first of June, both completely snowblind and quite exhausted. Broken masses of ice had impeded their progress and rendered the crossing impossible at that time.

Bonsall's expedition to the north which had left the Advance on June fifth, returned on June twenty-seventh in good condition, having made many observations for the survey of the region. This party reached the Humboldt Glacier in twelve days but they could not climb to the top of it as they had planned to do.

Morton's expedition proceeded up the coast to beyond 81° latitude.

Here he fastened to his walking pole the Grinnell flag of the Antarctic, a cherished little relic, which had now followed me [Kane] on two Polar voyages. This flag had been saved from the wreck of the U. S. Sloop of War Peacock when she stranded off the Columbia River, it had accompanied Commodore Wilkes in his far-southern discovery of an Antarctic continent. It was now its strange destiny to float over the highest northern land, not only of America but of the globe. Side by side with this were our Masonic emblems of the compass and the square.[31]

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[30] "Dr. Hayes," wrote Kane, "regards my attack as one of scurvy, complicated by typhoid fever."

[31] Sir John Franklin and Elisha Kent Kane were members of the Fraternity of Free and Accepted Masons, the latter being a member of the Franklin Lodge in Philadelphia.

While these explorations were progressing, the Advance remained imprisoned in the ice. Summer was passing and the ice had not broken up as expected. The members of the expedition began to think of their return southward. Dr. Kane wrote:

> For there never was, and I trust never will be, a party worse armed for the encounter of a second Arctic winter. We have neither health, fuel, nor provisions. Dr. Hayes, and indeed all I have consulted about it indirectly, despond at the thought; and when I look round upon our diseased and disabled men, and think of the fearful work of the last long night, I am tempted to feel as they do.
>
> The alternative of abandoning the vessel at this early stage of our absence, even were it possible, would, I feel, be dishonoring; but revolving the question as one of practicability alone, I would not undertake it. In the first place, how are we to get along with our sick and newly amputated men? It is a dreary distance at the best to Upernavik or Beechy Island, our only seats of refuge, and a precarious traverse if we were all of us fit for moving; but we are hardly one-half in efficiency of what we count in number. Besides, how can I desert the brig while there is still a chance of saving her? There is no use of noting pros and cons: my mind is made up; I will not do it.
>
> But I must examine this ice-field for myself. I have been maturing through the last fortnight a scheme of relief, based upon a communication with the English squadron to the south, and tomorrow I set out to reconnoitre. Hans will go with me. We will fit out our poor travel-worn dogs with canvas shoes, and cross the floes to the true water-edge, or at least be satisfied that it is impossible. "He sees best who uses his own eyes." After that I have my course resolved on.
>
> July 11, Tuesday. We got back last night: a sixty miles' journey, comfortless enough, with only three hours' sleep on the ice. For thirty-five miles south the straits are absolutely tight. Off Refuge Inlet and Esquimaux Point we found driving leads; but between these points and the brig, not a crack. I pushed the dogs over the drift-ice, and after a fair number of mischances, found the North Water. It was flowing and free; but since McGary saw it last May it has not advanced more than four miles. It would be absurd at this season of the year to attempt escaping in open boats with this ice between us and water. All that can be done is to reinforce our energies as we may, and look the worst in the face.
>
> In view of these contingencies, I have determined to attempt in person to communicate with Beechy Island, or at least make the effort. If I can reach Sir Edward Belcher's squadron, I am sure of all I want. I will take a light whaleboat, and pick my companions for a journey to the south and west. I may find perhaps the stores of the North Star at the Wolstenholme Islands, or by great good luck come across some passing vessel of the squadron, and make known our whereabouts and wants; or, failing these, we will try and coast it along to Wellington Channel.
>
> A depot of provisions and a seaworthy craft large enough to carry us: if I had these, everything would be right. Even Sir John Ross's launch, the Little Mary that he left at Union Bay, would serve our purpose. If I had her, I could make a southern passage after the fall tides. The great enemy of that season is the young shore-ice, that would cut through our frail boats like a saw. Or, if we can only renew our stock of provisions for the winter, we may await the chances of next year.
>
> I know it is a hazardous venture, but it is a necessary one, and under the circumstances an incumbent duty. I should have been glad, for some reasons, if the command of such an attempt could have been delegated to a subordinate; but I feel that I have no right to devolve this risk upon another, and I am, besides, the only one possessed of the necessary local knowledge of Lancaster Sound and its ice-movements.
>
> As a prelude to this solemn undertaking, I met my officers in the evening, and showed them my ice-charts; explaining, what I found needed little explanation, the prospect immediately before us. I then discussed the probable changes, and, giving them my personal opinion that the brig might after all be liberated at a late date, I announced my project. I will not say how gratified I was with the manner in which they received it. It struck me that there was a sense of personal relief experienced everywhere. I told them that I did not choose to call a council or connect any of them with the responsibilities of the measure, for it involved only the personal safety of those who chose to share the risk.

Full instructions were then left for their guidance during my absence.

This effort resulted in failure and the party returned to the Advance after exploring the mass of ice which lay to the south. The brig had been imprisoned by closely cementing ice for eleven months, during which period she had not budged an inch from her icy cradle.

August 18, Friday. Reduced our allowance of wood to six pounds a meal. This, among eighteen mouths, is one-third of a pound of fuel for each. It allows us coffee twice a day, and soup once. Our fare besides this is cold pork boiled in quantity and eaten as required. This sort of thing works badly; but I must save coal for other emergencies. I see darkness ahead.

I inspected the ice again today. Bad! Bad! I must look another winter in the face. I do not shrink from the thought; but, while we have a chance ahead, it is my first duty to have all things in readiness to meet it. It is horrible, yes, that is the word, to look forward to another year of disease and darkness to be met without fresh food and without fuel. I should meet it with a more tempered sadness if I had no comrades to think for and protect.

August 20, Sunday. Rest for all hands. The daily prayer is no longer "Lord accept our gratitude and bless our undertaking," but "Lord, accept our gratitude and restore us to our homes." The ice shows no change: after a boat and foot journey around the entire south-eastern curve of the bay, no signs!

I was out in the Red Eric with Bonsall, McGary, Hans, Riley, and John. We tracked her over the ice to the Burgomaster Cove, the flanking cape of Charlotte Wood Fiord and its river. Here we launched her, and went all around the long canal which the running waters have eaten into the otherwise unchanged ice. Charlotte Wood Fiord is a commanding sheet of water, nearly as wide as the Delaware: in the midst of the extreme solidity around us, it looked deceitfully gladdening. After getting to the other side, near Little Willie's Monument, we ascended a high bluff, and saw everything weary and discouraging beyond. Our party returned quite crestfallen.

My attempt to reach Beechy Island had disclosed, as I thought it would, the impossibility of reaching the settlements of Greenland. Between the American and the opposite side of the bay was one continuous pack of ice, which, after I had travelled on it for many miles to the south, was still of undefined extent before me. The birds had left their colonies. The water-streams from the bergs and of the shore were freezing up rapidly. The young ice made the water-surface impassable even to a whaleboat. It was clear to me that without an absolute change of circumstances, such as it was vain to look for any longer, to leave the ship would be to enter upon a wilderness destitute of resources, and from which it would be difficult, if not impracticable, to return.

Everything before us was involved in gloomy doubt. Hopeful as I had been, it was impossible not to feel that we were near the climax of the expedition.

I determined to place upon Observatory Island a large signal-beacon or cairn, and to bury under it documents which, in case of disaster to our party, would convey to any who might seek us intelligence of our proceedings and our fate. The memory of the first winter quarters of Sir John Franklin,[32] and the painful feelings with which, while standing by the graves of his dead, I had five years before sought for written signs pointing to the fate of the living, made me careful to avoid a similar neglect.

A conspicuous spot was selected upon a cliff looking out upon the icy desert, and on a broad face of rock the words

ADVANCE

A. D. 1853–54

were printed in letters which could be read at a distance. A pyramid of heavy stones, perched above it, was marked with the Christian symbol of the cross. It was not without a holier sentiment than that of mere utility that I placed under this the coffins of our two poor comrades. It was our beacon and their gravestone.

Near this a hole was worked into the rock, and a paper, enclosed in glass, sealed in with melted lead. It read as follows:

"Brig Advance, August 14, 1854

"E. K. Kane, with his comrades Henry Brooks, John Wall Wilson, James McGary, I. S. Hayes, Christian Ohlsen, Amos Bonsall, Henry Goodfellow, August Sontag, William Morton, J. Carl Petersen, George Stephenson, Jefferson Temple Baker, George Riley, Peter Schubert, George Whipple, John Blake, Thomas Hickey, William Godfrey, and Hans Christian, members of the Second Grinnell Expedition in search of Sir John Franklin and the missing crews of the Erebus and Terror, were forced into this harbor while endeavoring to bore the ice to the north and east.

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[32] Discovered during the first expedition.

"They were frozen in on the 8th of September 1853, and liberated———

"During this period the labors of the expedition have delineated nine hundred and sixty miles of coast-line, without developing any traces of the missing ships or the slightest information bearing upon their fate. The amount of travel to effect this exploration exceeded two thousand miles, all of which was upon foot or by the aid of dogs.

"Greenland has been traced to its northern face, whence it is connected with the farther north of the opposite coast by a great glacier. This coast has been charted as high as lat. 82° 27′. Smith's Sound expands into a capacious bay: it has been surveyed throughout its entire extent. From its northern and eastern corner, in lat. 80° 10′ N., long. 66° W., a channel has been discovered and followed until farther progress was checked by water free from ice. This channel trended nearly due north, and expanded into an apparently open sea, which abounded with birds and bears and marine life.

"The death of the dogs during the winter threw the travel essential to the above discoveries upon the personal efforts of the officers and men. The summer finds them much broken in health and strength.

"Jefferson Temple Baker and Peter Schubert died from injuries received from cold while in manly performance of their duty. Their remains are deposited under a cairn at the north point of Observatory Island.

"The site of the observatory is seventy-six English feet from the northernmost salient point of this island, in a direction S. 14° E. Its position is in lat. 78° 37′ 10″ N., long. 70° 4′ W. The mean tidal level is twenty-nine feet below the highest point upon this island. Both of these sites are further designated by copper bolts sealed with melted lead into holes upon the rocks.

"On the 12th of August, 1854, the brig warped from her position, and, after passing inside the group of islands, fastened to the outer floe about a mile to the northwest, where she is now awaiting further changes in the ice.

Signed,
E. K. Kane,
Commanding Expedition.
Fox-Trap Point, August 14, 1854."

Some hours later, the following note was added.

"The young ice having formed between the brig and this island, and prospects of a gale showing themselves, the date of departure is left unfilled. If possible, a second visit will be made to insert our dates, our final escape being still dependent upon the course of the season.

E. K. Kane."

And now came the question of the second winter: how to look our enemy in the face, and how to meet him. Anything was better than inaction; and, in spite of the uncertainty which yet attended our plans, a host of expedients were to be resorted to, and much Robinson Crusoe labor ahead. Moss was to be gathered for eking out our winter fuel, and willow-stems and stonecrops and sorrel, as antiscorbutics, collected and buried in the snow. But while all these were in progress came other and graver questions.

Some of my party had entertained the idea that an escape to the south was still practicable; and this opinion was supported by Mr. Petersen, our Danish interpreter, who had accompanied the Searching Expedition of Captain Penny, and had a matured experience in the changes of Arctic ice. They even thought that the safety of all would be promoted by a withdrawal from the brig.

August 21, Monday. The question of detaching a party was in my mind some time ago; but the more I thought it over, the more I was convinced that it would be neither right in itself nor practically safe. For myself personally, it is a simple duty of honor to remain by the brig: I could not think of leaving her till I had proved the effect of the later tides; and after that, as I have known all along, it would be too late. Come what may, I share her fortunes.

But it is a different question with my associates. I cannot expect them to adopt my impulses; and I am by no means sure that I ought to hold them bound, by my conclusions. Have I the moral right? for, as to nautical rules, they do not fit the circumstances: among the whalers, when a ship is hopelessly beset, the master's authority gives way, and the crew take counsel for themselves whether to go or stay by her. My party is subordinate and well disposed; but if the restlessness of suffering makes some of them anxious to brave the chances, they may certainly plead that a second winter in the ice was no part of the cruise they bargained for.

But what presses on me is of another character. I cannot disguise it from myself that we are wretchedly prepared for another winter on board. We are a set of scurvy-riddled, broken-down men; our provisions are sorely reduced in quantity, and are altogether unsuited to our condition. My only hope of maintaining or restoring such a degree of health among us as is indispensable to our escape in the spring has been and must be in a wholesome elastic tone of feeling among the men: a reluctant, brooding, disheartened spirit would sweep our decks like a pestilence. I fear the bane of depressing example.

I know all this as medical man and officer; and I feel that we might be wearing away the hearts and energies, if not the lives of all, by forcing those who were reluctant to remain. With half a dozen confiding resolute men, I have no fears of ultimate safety.

I will make a thorough inspection of the ice tomorrow, and decide finally the prospects of our liberation.

August 23, Wednesday. The brig cannot escape. I got an eligible position with my sledge to review the floes, and returned this morning at two o'clock. There is no possibility of our release, unless by some extreme intervention of the coming tides. I doubt whether a boat could be forced as far as the Southern Water. When I think of the extraordinary way in which the ice was impacted last winter, how very little it has yielded through the summer, and how early another winter is making its onset upon us, I am very doubtful, indeed, whether our brig can get away at all. It would be inexpedient to attempt leaving her now in boats; the water-streams closing, the pack nearly fast again, and the young ice almost impenetrable.

I shall call the officers and crew together, and make known to them very fully how things look, and what hazards must attend such an effort as has been proposed among them. They shall have my views unequivocally expressed. I will then give them twenty-four hours to deliberate; and at the end of that time all who determine to go shall say so in writing, with a full exposition of the circumstances of the case. They shall have the best outfit I can give, an abundant share of our remaining stores, and my good-bye blessing.

August 24, Thursday. At noon today I had all hands called, and explained to them frankly the considerations which have determined me to remain where we are. I endeavored to show them that an escape to open water could not succeed, and that the effort must be exceedingly hazardous. I alluded to our duties to the ship; in a word, I advised them strenuously to forego the project. I then told them that I should freely give my permission to such as were desirous of making the attempt, but that I should require them to place themselves under the command of officers selected by them before setting out, and to renounce in writing all claims upon myself and the rest who were resolved to stay by the vessel. Having done this, I directed the roll to be called, and each man to answer for himself.

In the result, eight out of the seventeen survivors of my party resolved to stand by the brig. It is just that I should record their names. They were Henry Brooks, James McGary, J. W. Wilson, Henry Goodfellow, William Morton, Christian Ohlsen, Thomas Hickey, Hans Christian.

I divided to the others their portion of our resources justly and even liberally; and they left us on Monday, the 28th, with every appliance our narrow circumstances could furnish to speed and guard them. One of them, George Riley, returned a few days afterward; but weary months went by before we saw the rest again. They carried with them a written assurance of a brother's welcome should they be driven back; and this assurance was redeemed when hard trials had prepared them to share again our fortunes.

The remainder of the party now made active preparations for the winter. Dr. Kane determined to adopt the Eskimo manner of living. The quarter-deck was well padded with moss which he had found to be an excellent non-conductor of heat. Down below a space some eighteen feet square was enclosed and the walls were packed with moss. The entrance to this space was from the hold, by a low moss-lined tunnel with as many doors and curtains as ingenuity could devise. This was to be their apartment for all purposes but, as Dr. Kane wrote: "We are only ten to stow away, and the closer the warmer." They had in fact turned the brig into an Eskimo igloo.

Hunting parties were sent out and succeeded in obtaining fresh bear and walrus meat. On October twenty-first, Saturday, Dr. Kane wrote:

> The light is fast leaving us. The sun has ceased to reach the vessel. The northeastern headlands or their southern faces up the fiords have still a warm yellow tint, and the pinnacles of the ice-bergs far out on the floes are lighted up at noon-day; but all else is dark shadow.
>
> October 26, Thursday. The thermometer at 34° below zero, but fortunately no wind blowing. We go on with the outdoor work. The gangway of ice is finished, and we have passed wooden steam-tubes through the deck-house to carry off the vapors of our cooking stove and the lighter impurities of the crowded cabin.
>
> We burn but seventy pounds of fuel a day, most of it in the galley; the fire being allowed to go out between meals. We go without fire altogether for four hours of the night; yet such is the excellence of our moss walls, . . . that the thermometer in-doors never indicates less than 45° above zero, with the outside air at 30° below. When our housing is arranged and the main hatch secured with a proper weather-tight screen of canvas, we shall be able, I hope, to meet the extreme cold of February and March without fear.
>
> Darkness is the worst enemy we have to face; but we will strive against the scurvy in spite of him, till the light of sun and vegetation. The spring hunt will open in March, though it will avail us very little till late in April.

The game which Dr. Kane desired as a preventive of scurvy soon entirely disappeared. On Wednesday, November fifteenth, he wrote:

> Our traps have been empty for ten days past; but for the pittance of excitement which the visit to them gives, we might as well be without them.
>
> The men are getting nervous and depressed. Gary paced the deck all last Sunday in a fit of homesickness, without eating a meal. I do my best to cheer them; but it is hard work to hide one's own trials for the sake of others who have not as many.
>
> December 1, Friday. I am writing at midnight. I have the watch from eight to two. It is day in the moonlight on deck, the thermometer getting up again to 36° below zero. As I come down to the cabin for so we still call this little moss-lined igloë of ours everyone is asleep, snoring, gritting his teeth, or talking in his dreams. This is pathognomonic; it tells of Arctic winter and its companion scurvy. Tom Hickey, our good-humored, blundering cabin-boy, decorated since poor Schubert's death with the dignities of cook, is in that little dirty cot on the starboard side; the rest are bedded in rows, Mr. Brooks and myself chock aft. Our bunks are close against the frozen moss wall, where we can take in the entire family at a glance. The apartment measures twenty feet by eighteen; its height six feet four inches at one place, but diversified elsewhere by beams crossing at different distances from the floor. The avenue by which it is approached is barely to be seen in the moss wall forward: twenty feet of air-tight space make misty distance, for the puff of outside temperature that came in with me has filled our atmosphere with vesicles of vapor. The avenue, Ben-Djerback is our poetic name for it, closes on the inside with a door well patched with flannel, from which, stooping upon all-fours, you back down a descent of four feet in twelve through a tunnel three feet high and two feet six inches broad. It would have been a tight squeeze for a man like Mr. Brooks when he was better fed and fatter. Arrived at the bottom, you straighten yourself, and a second door admits you into the dark and sorrowing hold, empty of stores and stripped to its naked ceiling for firewood. From this we grope our way to the main hatch, and mount by a rude stairway of boxes into the open air.
>
> December 2, Saturday. Had to put Mr. McGary and Riley under active treatment for scurvy. Gums retracted, ankles swollen, and bad lumbago. Mr. Wilson's case, a still worse one, has been brought under. Morton's is a saddening one: I cannot afford to lose him. He is not only one of my most intelligent men, but he is daring, cool, and everyway trustworthy. His tendon Achilles has been completely perforated, and the surface of the heel-bone

> exposed. An operation in cold, darkness, and privation, would probably bring on locked-jaw. Brooks grows discouraged: the poor fellow has scurvy in his stump, and his leg is drawn up by the contraction of the flexors at the knee joint. This is the third case on board, the fourth if I include my own, of contracted tendons.
>
> December 3, Sunday. I have now on hand twenty-four hundred pounds of chopped wood, a store collected with great difficulty; and yet how inadequate a provision for the sickness and accident we must look for through the rest of the dark days! It requires the most vigorous effort of what we call a healthy man to tear from the oak ribs of our stout little vessel a single day's firewood. We have but three left who can manage even this; and we cannot spare more than one for the daily duty. Two thousand pounds will barely carry us to the end of January, and the two severest months of the Arctic year, February and March, will still be ahead of us.
>
> To carry us over these, our days of greatest anticipated trial, we have the outside oak sheathing, or trebling, as the carpenters call it, a sort of extra skin to protect the brig against the shocks of the ice. Although nearly three inches thick, it is only spiked to her sides, and carpenter Ohlsen is sure that its removal will not interfere with her sea-worthiness. Cut the trebling only to the water-line, and it will give me at least two and a half tons; and with this, God willing, I may get through this awful winter, and save the brig besides!
>
> December 4, Monday. The stove is smoking so that three of our party are down with acute inflammation of the eyes. I fear I must increase the diameter of our smoke-pipes, for the pitch-pine which we burn, to save up our oak for the greater cold, is redundantly charged with turpentine. Yet we do not want an increased draught to consume our seventy pounds; the fiat "No more wood" comes soon enough.
>
> Then for the night-watch. I have generally something on hand to occupy me, and can volunteer for the hours before my regular term. Everything is closed tight; I muffle myself in furs, and write; or, if the cold denies me that pleasure, I read, or at least think. Thank heaven, even an Arctic temperature leaves the mind unchilled. But in truth, though our hourly observations in the air range between −46° and −30° we seldom register less than 36° below.
>
> December 5, Tuesday. McGary is no better, but happily has no notion how bad he is. I have to give him a grating of our treasured potatoes. He and Brooks will doubtless finish the two I have got out, and then there will be left twelve. They are now three years old, poor old frozen memorials of the dear land they grew in. They are worth more than their weight in gold.

In the forenoon on December seventh, while Dr. Kane was asleep after the fatigue of an extra night watch, he was called to the deck by the report that Eskimo sledges were approaching. "They came on rapidly, five sledges with teams of six dogs each, most of the drivers strangers to us and in a few minutes were at the brig. Their errand was of charity. They were bringing back to us Bonsall and Petersen, two of the party that left us on the 28th of August." They had left their companions two hundred miles to the south "divided in their counsels, their energies broken, and their provisions nearly gone."

Kane's first thought was of means of rescuing the remainder of the party. He resolved to dispatch the Eskimos with such supplies as his stores allowed, receiving their pledge to carry them with all speed. The stores were sent with many misgivings as Dr. Kane did not rely on the honesty of the Eskimo when tempted by a large amount of food. His fears were justified, the supplies never reached the party. However, on the twelfth of December, Tuesday, he wrote:

> Brooks awoke me at three this morning with the cry of "Esquimaux again!" I dressed hastily, and, groping my way over the pile of boxes that leads up from the hold into the darkness above, made out a group of human figures, masked by the hooded jumpers of the natives. They stopped at the gangway, and, as I was about to challenge, one of them sprang forward and grasped my hand. It was Doctor Hayes. A few words, dictated by suffering, certainly not by any anxiety as to his reception, and at his bidding the whole party came upon deck. Poor fellows! I could only grasp their hands and give them a brother's welcome.

The thermometer was at minus 50°; they were covered with rime and snow, and were fainting with hunger. It was necessary to use caution in taking them below; for, after an exposure of such fearful intensity and duration as they had gone through, the warmth of the cabin would have prostrated them completely. They had journeyed three hundred and fifty miles; and their last run from the bay near Etah, some seventy miles in a right line, was through the hummocks at this appalling temperature.

One by one they all came in and were housed. Poor fellows! as they threw open their Esquimaux garments by the stove, how they relished the scanty luxuries which we had to offer them! The coffee and the meat-biscuit soup, and the molasses and the wheat bread, even the salt pork which our scurvy forbade the rest of us to touch, how they relished it all! For more than two months they had lived on frozen seal and walrus-meat.

They are almost all of them in danger of collapse, but I have no apprehension of life unless from tetanus. Stephenson is prostrate with pericarditis. I resigned my own bunk to Dr. Hayes, who is much prostrated; he will probably lose two of his toes, perhaps a third. The rest have no special injury.

On Christmas Day he wrote: "All together again, the returned and the steadfast, we sat down to our Christmas dinner. . . We forgot our discomforts in the blessings which adhered to us still; and when we thought of the long road ahead of us, we thought of it hopefully."

In spite of this cheerfulness, the year 1855 did not open very auspiciously for the little party. The supply of fresh meat was exhausted and Dr. Kane feared the ravages of scurvy.

On January fourteenth, he wrote: "I found an overlooked god-send this morning, a bear's head, put away for a specimen, but completely frozen. There is no inconsiderable quantity of meat adhering to it and I will serve it out raw to [the sick]."

The relief obtained from the "specimen" was only temporary. Under date of January 17th Kane the following entry:

January 17, Wednesday. There is no evading it any longer: it has been evident for the past ten days that the "present state of things cannot last." We require meat, and cannot get along without it. Our sick have finished the bear's head, and are now eating the condemned abscessed liver of the animal, including some intestines that were not given to the dogs. We have about three days' allowance; thin chips of raw frozen meat, not exceeding four ounces in weight for each man per diem. Our poor fellows eat it with zest; but it is lamentably little.

Although I was unsuccessful in my last attempt to reach the huts with the dogs, I am far from sure that with a proper equipment it could not be managed by walking. The thought weighs upon me. A foot-travel does not seem to have occurred to my comrades; and at first sight the idea of making for a point seventy-five miles by the shortest line from our brig, with this awfully cold darkness on, is gloomy enough.

But I propose walking at first only as far as the broken hut at Anoatok[33] (the "wind-loved spot") and giving our poor dogs a chance of refreshing there. After this, Hans and myself will force them forward as far as we can, with nothing but our sleeping-gear, and spend the second night wherever they happen to break down. After that, we can manage the rest of the journey without any luggage but our personal clothing.

It seems hard to sacrifice the dogs, not to speak of the rest of the party; but the necessity is too palpable and urgent. As we are now, a very few deaths would break us up entirely. Still, the emergency would not move me if I did not feel, after careful, painful thought, that the thing can be accomplished. If by the blessing of the Great Ruler it should prove successful, the result will secure the safety of all hands. No one knows as yet of my intention except Hans himself. I am quietly preparing a special outfit, and will leave with the first return of moonlight.

January 22, Monday. Busy preparing for my trip to the lower Eskimo settlements. The barometer remains at the extraordinary height of 30.85 a bad prelude to a journey.

Petersen caught another providential fox. We divided him into nine portions, three for each of our scurvied patients. I am off!

As the barometer indicated, bad weather was approaching. The journey to the

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[33] This was a deserted Eskimo habitation.

Eskimo settlement at Etah was not completed because of a severe snowstorm which forced Dr. Kane back to the Advance.

January 30, Tuesday. My companions on board felt all my disappointment at bringing back no meat; but infinite gladness took the place of regret when they heard the great news of a passage through the hummocks. Petersen began at once to busy himself with his wardrobe; and an eight-day party was organized almost before we turned in, to start as soon as the tempestuous weather subsides and the drifts settle down. It is four days since, but as yet we dare not venture out.

That there is no time for delay, this health-table will show:

Henry Brooks: Unable any longer to go on deck: we carry him with difficulty from his berth to a cushioned locker.

McGary: Less helpless; but off duty, and saturated with articular scurvy.

Mr. Wilson: In bed. Severe purpuric blotches, and nodes in limbs. Cannot move.

George Riley: Abed; limbs less stiff, gums better, unable to do duty.

Thomas Hickey, (our cook): Cannot keep his legs many days more; already swelled and blistered.

William Morton: Down with a frozen heel; the bone exfoliating.

Henry Goodfellow: Scurvied gums, but generally well.

Dr. Hayes is prostrate with his amputated toes: Sontag just able to hobble. In a word, our effective force is reduced to five: Mr. Ohlsen, Mr. Bonsall, Petersen, Hans, and the Commander; and even of these some might, perhaps, be rightfully transferred to the other list. We have the whole burden of the hourly observations and the routine of our domestic life, even to the cooking, which we take in rotation.

. . . Still this remarkable temperature; the barometer slowly vibrating between 29.20 and the old 30.40. Snow falling: wind from the southwest, hauling by the west to north: yet the thermometer at −10° and +3°. We long anxiously for weather to enable our meat-party to start. The past two days our sick have been entirely out of meat: the foxes seem to avoid our traps. I gave Wilson one raw meal from the masseter muscle which adhered to another old bear's head I was keeping for a specimen. But otherwise we have had no anti-scorbutic for three days.

Among other remedies which I oppose to the distemper, I have commenced making sundry salts of iron; among them the citrate and a chlorohydrated tincture. We have but one bottle of brandy left: my applying a half-pint of it to the tincture shows the high value I set upon this noble chalybeate. My nose bled today, and I was struck with the fluid brickdusty poverty of the blood. I use iron much among my people: as a single remedy it exceeds all others except only the specific of raw meat: potash for its own action is well enough to meet some conditions of the disease, and we were in the habit of using freely an extemporaneous citrate prepared from our lime-juice; but, as our cases became more reduced and complicated with hemorrhages, iron was our one great remedy.

January 31, Wednesday. The weather still most extraordinary. The wind has hauled around, and is now blowing from the north and northeast, usually our coldest and clearest quarter. Yet the diffused mist continues, the snow falls, and the thermometer never records below −20°.

Our sick are worse; for our traps yield nothing, and we are still without fresh food. The absence of raw fox-meat for a single day shows itself in our scurvy. Hemorrhages are becoming common. My crew (I have no crew any longer) the tenants of my bunks cannot bear me to leave them a single watch. Yet I cannot make Petersen try the new path which I discovered and found practicable. Well; the wretched month is over. It is something to be living, able to write. No one has yet made the dark voyage, and January the thirty-first is upon us.

February 2, Friday. The weather clears, the full moon shows herself, the sledge is packed, and Petersen will start tomorrow.

February 3, Saturday. He is gone with Hans. A bad time with Brooks, in a swoon from exhaustion!

February 4, Sunday. Mr. Ohlsen breaks down: the scurvy is in his knee, and he cannot walk. This day, too, Thomas Hickey, our acting cook, gives way completely. I can hardly realize that among these strong men I alone should be the borne-up man, the only one, except Mr. Bonsall, on his legs. It sometimes makes me tremble when I think how necessary I am to sustain this state of things. It is a Sunday

> thought, that it must be for some wise and good end I am thus supported.
>
> Made an unsuccessful hunt. . . but, although the daylight was more than ample, tracked nothing. Our sick have been on short commons for the last five days: and we have given up the traps for want of fresh meat to bait them with. . .
>
> I made a dish of freshened codfish-skin for Brooks and Wilson; they were hungry enough to relish it. Besides this, I had kept back six bottles of our Scotch ale to meet emergencies, and I am dealing these out to them by the wine-glass. It is too cold for brewing in our apartment: the water freezes two feet above the floor. I have given up my writing-table arrangements, and my unfortunate study-lamp is now fixed under a barrel to see if it cannot raise a fermenting temperature. I shall turn brewer to-morrow if it succeeds.

Discouraging as the outlook was, affairs took a slight turn for the better and on February sixth Dr. Kane wrote:

> But today our fortunes are on the mend. It has been beautifully clear; and for the first time a shade of bronzed yellow has warmed our noonday horizon, with a gentle violet running into rich brown clouds, totally unlike our night skies. Hans and I started for a hunt, one to explore new grounds, the other to follow tracks in the recent snow. The result was two rabbits, the first-fruits of the coming light, and the promise of more in the numerous feeding-traces among the rocks of Charlotte Wood Fiord. The meat, our first for ten days, was distributed raw. By keeping the rabbits carefully covered up, they reached the ship sufficiently unfrozen to give us about a pint of raw blood. It was a grateful cordial to Brooks, Wilson, and Riley.

Again the relief afforded by Hans' efforts was slight. On February ninth, we find the following entry:

> Still no [fresh] supplies. Three of us have been out all day, without getting a shot. . . Our sick are sinking for want of fresh food. It is the only specific. . . In large quantities it dissipates the disease; in ordinary rations it prevents its occurrence; in small doses it checks it while sustaining the patient. We have learned its value too well to waste it; every part of every animal has its use. The skin makes the basis of a soup, and the claws can be boiled to a jelly. Lungs, larynx, stomach, and entrails, all are available.

So it went; a day of despondency followed by one of cheer when Hans brought in a rabbit. Dr. Kane said in his account of his explorations:

> It is hardly worth while to inflict on the reader a succession of journal records like these. They tell of nothing but the varying symptoms of sick men, dreary, profitless hunts, relieved now and then by the signalized incident of a killed rabbit or a deer seen, and the longed for advent of the solar light. We were six all told out of eighteen, who could affect to hunt, cook or nurse.
>
> We have three months before us of intense cold. We have a large and laborious outfit to arrange, boats, sledges, provisions, and accoutrements for a journey of alternating ice and water of more than thirteen hundred miles. Our carpenter is among the worst of our invalids. Supposing all our men able to move, four at least of them must be carried by the rest, three in consequence of amputation, and one from frost-wounds; and our boats must be sledged over some sixty or perhaps ninety miles of terrible ice before launching and loading them. Finally, a part of our force, whatever it may be, must be detailed to guard our property from the Esquimaux while the other detachments are making their successive trips to the open water. So much for the shadow of the picture!
>
> But it has two sides; and, whether from constitutional temperament or well-reasoned argument, I find our state far from desperate. I cheer my comrades after this fashion:
>
> 1. I am convinced, from a careful analysis of our disease, that under its present aspects it is not beyond control. If with the aid of our present hunting-resources or by any providential accession to them I can keep the cases from rapid depression, next month ought to give us a bear, and in the meantime Hans may find a deer; and, with a good stock of fresh meat even for a few days, I can venture away from the vessel to draw supplies from the Esquimaux at Etah. I should have been there

before this, if I could have been spared for forty-eight hours. We want nothing but meat.

2. The coming of the sun will open appliances of moral help to the sick, and give energy to the hygienic resorts which I am arranging at this moment. Our miserable little kennel, where eighteen are crowded into the space of ten, is thoroughly begrimed with lampblack from the inevitable smoke of our fuel. The weather has prevented our drying and airing the sleeping-gear. The floor is damp from the conducted warmth of the sea-water under us, melting the ice that has condensed everywhere below. Sunshine and dry weather will cure all this. I have window-sash ready to fix over the roof and southern side of the galley-house; and our useless daguerreotype plates, tacked over wooden screens, make admirable mirrors to transfer the sun-rays into the cabin. I have manufactured a full-draught pipe for our smoky stove. . .

3. While we live we will stick together: one fate shall belong to us all, be it what it may.

There is comfort in this review; and, please God in his beneficent providence to spare us for the work, I will yet give one more manly tug to search the shores of Kennedy Channel for memorials of the lost; and then, our duties over here, and the brig still prisonbound, enter trustingly upon the task of our escape.

February 26, Monday. William Godfrey undertook to act as cook today, but fainted before completing the experiment. The rest of us are little better; and now it looks as if we were to lose our best caterer, for Hans too shows signs of giving way to the scurvy.

I have been at work for an hour, cutting up the large Manila hawser for fuel. I do not know that I have any very remarkable or valuable quality; but I do know that, however multiform may be my virtues, I am a singularly awkward hand in chopping up frozen cables.

February 28, Wednesday. February closes: thank God for the lapse of its twenty-eight days! Should the thirty-one of the coming March not drag us further downward, we may hope for a successful close to this dreary drama. By the tenth of April we should have seal; and when they come, if we remain to welcome them, we can call ourselves saved.

But a fair review of our prospects tells me that I must look the lion in the face. The scurvy is steadily gaining on us. I do my best to sustain the more desperate cases; but as fast as I partially build up one, another is stricken down. The disease is perhaps less malignant than it was, but it is more diffused throughout our party. Except William Morton, who is disabled by a frozen heel, not one of our eighteen is exempt. Of the six workers of our party, as I counted them a month ago, two are unable to do outdoor work, and the remaining four divide the duties of the ship among them. Hans musters his remaining energies to conduct the hunt. Petersen is his disheartened moping assistant. The other two, Bonsall and myself, have all the daily offices of household and hospital. We chop five large sacks of ice, cut six fathoms of eight-inch hawser into junks of a foot each, serve out the meat when we have it, hack at the molasses, and hew out with crowbar and axe the pork and dried apples, pass up the foul slop and cleansings of our dormitory; and, in a word, cook scullionize, and attend the sick. Added to this, for five nights running I have kept watch from 8 P.M. to 4 A.M., catching cat-naps as I could in the day without changing my clothes, but carefully waking every hour to note thermometers.

Such is the condition in which February leaves us, with forty-one days more ahead of just the same character in prospect as the twenty-eight which, thank God! are numbered now with the past. It is saddening to think how much those twenty-eight days have impaired our capacities of endurance. Yet there are resources, accidental perhaps, mercifully providential let me rather term them, contingent certainly, so far as our prescience goes, which may avail to save us: another reindeer of sound carcass, a constant succession of small game, supplies of walrus from the fugitive Esquimaux, or that which I most expect and hope for, a bear. We have already seen some tracks of these animals; and last March there were many of them off Coffee Gorge and the Labyrinth. If Hans and myself can only hold on, we may work our way through. All rests upon destiny, or the Power which controls it.

My journal for the beginning of March is little else than a chronicle of sufferings. Our little party was quite broken down. Every man on board was tainted with scurvy, and it was not common to find more than three who could assist in caring for the rest. The greater number were in their bunks, absolutely unable to stir.

The circumstances were well fitted to bring out the character of individuals. Some were intensely grateful for every little act of kindness from their more fortunate messmates; some querulous; others desponding; others again wanted only strength to become mutinous. Brooks, my first officer, as stalwart a man-o'-war's man as ever faced an enemy, burst into tears when he first saw himself in the glass. On Sunday, the 4th, our last remnant of fresh meat had been doled out. Our invalids began to sink rapidly. The wounds of our amputated men opened afresh. The region about our harbor ceased to furnish its scanty contingent of game. One of our huntsmen, Petersen, never very reliable in anything, declared himself unfit for further duty. Hans was unsuccessful: he made several wide circuits, and saw deer twice; but once they were beyond range, and the next time his rifle missed fire.

I tried the hunt for a long morning myself, without meeting a single thing of life, and was convinced, by the appearance of things on my return to the brig, that I should peril the morale, and with it the only hope, of my command by repeating the experiment.

I labored, of course, with all the ingenuity of a well-taxed mind, to keep up the spirits of my comrades. I cooked for them all imaginable compounds of our unvaried diet-list, and brewed up flax-seed and lime-juice and quinine and willow-stems into an abomination which was dignified as beer, and which some were persuaded for the time to believe such. But it was becoming more and more certain every hour, that unless we could renew our supplies of fresh meat, the days of the party were numbered.

During these trying days, Dr. Kane never doubted for an instant that the same Providence which had guarded his party through the long darkness of winter was still watching over them and eventually would guide them to safety. But how he did not know.

On the sixth of March, Kane made the desperate venture of sending off Hans Christian, his only trusted and effective hunter, on a sledge journey to find the Eskimos of Etah. Hans departed with the two surviving dogs in the lightest sledge.

March 9, Friday. Strength going. It was with a feeling almost of dismay that I found how difficult it was to get through the day's labors, Bonsall and myself the sole workers. After cleansing below, dressing and performing the loathsome duties of a nurse to the sick, cutting ice, cooking and serving messes, we could hardly go further.

I realize fully the moral effects of an unbroken routine: systematic order once broken in upon, discomfort, despondency, and increase of disease must follow of course. It weighed heavily on my spirit today when I found my one comrade and myself were barely able to cut the necessary fuel. The hour of routine-nightfall finds us both stiff and ill at ease. Having to keep the night-watch until 6 A.M., I have plenty of time to revolve my most uncomfortable thoughts.

Be it understood by any who may peradventure read of these things in my journal, that I express them nowhere else. What secret thoughts my companions may have are concealed from me and from each other; but none of them can see as I do the alternative future now so close at hand: bright and comforting it may be; but, if not, black and hopeless altogether.

Should Hans come back with a good supply of walrus, and himself unsmitten by the enemy, our sick would rise under the genial specific of meat, and our strength probably increase enough to convey our boats to the North Water. The Refuge Inlet Polynia will hardly be more than forty miles from our brig, and, step by step, we can sledge our boats and their cargoes down to it. Once at Cape Alexander, we can support our sick by our guns, and make a regular Capua of the bird-colonies of Northumberland Island. This, in honest truth my yet unswerving and unshaken hope and expectation, is what I preach to my people; and often in the silent hours of night I chat to some sleepless patient of cochlearia salads and glorious feasts of loons and eider-ducks.

On the other side, suppose Hans fails: the thought is horrible. The Spitzbergen victims were, at about this date, in better condition than we are: it was not until the middle of April that they began to die off. We have yet forty days to run before we can count upon the renovating blessings of animal life and restoring warmth. Neither Riley nor Wilson can last half that time without a supply of antiscorbutic food. Indeed, there is not a man on board who can hope to linger on till the spring comes unless we have relief.

Hans returned on March tenth, bringing a supply of walrus meat.

He had much to tell us; to men in our condition Hans was as a man from cities. We of the wilderness flocked around him to hear the news. Sugar-teats of raw meat are passed around. "Speak loud, Hans, that they may hear in the bunks."

The "wind-loved" Anoatok he had reached on the first night after leaving the brig: no Esquimaux there of course; and he slept not warmly at a temperature of 53° below zero. On the evening of the next day he reached Etah Bay, and was hailed with joyous welcome. But a new phase of Esquimaux life had come upon its indolent, happy, blubber-fed denizens. Instead of plump, greasy children, and round-cheeked matrons, Hans saw around him lean figures of misery: the men looked hard and bony, and the children shriveled in the hoods which cradled them at their mothers' backs. Famine had been among them; and the skin of a young sea-unicorn, lately caught, was all that remained to them of food. It was the old story of improvidence and its miserable train. They had even eaten their reserve of blubber, and were seated in darkness and cold, waiting gloomily for the sun. Even their dogs, their main reliance for the hunt and for an escape to some more favored camping-ground, had fallen a sacrifice to hunger. Only four remained out of thirty: the rest had been eaten.

Hans behaved well, and carried out my orders in their full spirit. He proposed to aid them in the walrus-hunt. They smiled at first with true Indian contempt; but when they saw my Marston rifle, which he had with him, they changed their tone. When the sea is completely frozen, as it is now, the walrus can only be caught by harpooning them at their holes or in temporary cracks. This mode of hunting them is called *utok*. It requires great skill to enter the harpoon, and often fails from the line giving way in the struggles of the animal. They had lost a harpoon and line in this manner the very day before Hans' arrival. It required very little argument to persuade them to accept his offered company and try the effect of his cone-ball on the harpooned animal before he made good his retreat.

I have not time to detail Hans' adventurous hunt, equally important to the scurvied sick of Rensselaer and the starving residents of Etah Bay. Metek (the eider-duck) speared a medium-sized walrus, and Hans gave him no less than five Marston balls before he gave up his struggles. The beast was carried back in triumph, and all hands fed as if they could never know famine again.

Hans returned to the brig with his share of the meat and an Eskimo boy who had agreed to help him hunt.

March 11, Sunday. The sick are not as bright as this relief ought to make them. The truth is they are fearfully down. Neither poor Wilson nor Riley could bear the meat, and they both suffered excessive pain with fever from a meal that was of very limited quantity. Even the stoutest could hardly bear their once solicited allowance of raw meat. I dispensed it cautiously, for I knew the hazards; but I am sure it is to be the salvation of all of us. It gives a respite at any rate, and we could not in reason ask for more.

March 12, Monday. The less severe cases on our sick-list are beginning to feel the influences of their new diet; but Wilson and Brooks do not react. Their inclination for food, or rather their toleration of it, is so much impaired that they reject meat in its raw state, and when cooked it is much less prompt and efficient in its action. My mode of serving it out is this: Each man has his saucer of thinly-sliced frozen walrus-heart with lime juice or vinegar, before breakfast; at breakfast, blood gravy with wheaten bread; at dinner, steaks slightly stewed or fried, without limit of quantity; none at tea proper, but at 8 P.M., a renewed allowance of raw slices and vinegar. It shows how broken down the party is, that under the appetizing stimulations of an Arctic sky all our convalescents and well men together are content with some seven pounds of meat. Their prostrate comrades are sustained by broth.

March 15. Today we have finished burning our last Manila hawser for fuel, the temperature remaining at the extraordinary mean of −52°. Our next resort must be to the [breaking up of portions] of the brig: Petersen, what remains of him, for the man's energies are gone, is now at work cutting off [portions that can be spared]. It is a hard trial for me. I have spared neither exertion, thought, nor suffering, to save the seaworthiness of our little vessel, but all to no end;

she can never bear us to the sea. Want of provisions alone, if nothing else, will drive us from her; for this solid case of nine foot ice cannot possibly give way until the late changes of fall, nor then unless a hot summer and a retarded winter afterward allow the winds to break up its firm casing.

> March 16, Friday. We have just a scant two days' allowance of meat for the sick. Hans has done his best; but there is nothing to be found on the hills, and I fear that a long hunting-journey to the south is our only resource.

The capture of a few ptarmigan and rabbits replenished the larder for a few days and on March nineteenth, Hans started once more for Etah to hunt again with the Esquimos.

Dr. Kane remained singularly free from the sickness which disabled his companions. Under date of March 21 he writes: "Save for the warnings of a secret trouble, the fox gnawing under the jacket, I do better than the rest; but I bear my fox." This is the only direct allusion we find to the cardiac disease which conquered him in the end, although Dr. Hayes in letters stated that he was often called to relieve Dr. Kane of severe attacks of dyspnea and that often the doctor had to sleep in a sitting posture.

> March 31, Saturday. This month, badly as its daily record reads, is upon review a cheering one. We have managed to get enough game to revive the worst of our scurvy patients, and have kept in regular movement the domestic wheel of shipboard. Our troubles have been greater than at any time before; perhaps I ought to say they are greatest as the month closes: but, whatever of misery Bonsall and Petersen and myself may have endured, it seems nearly certain now that at least four men will soon be able to relieve us. Brooks, McGary, Riley, and Thomas have seen the crisis of their malady, and, if secured from relapse, will recover rapidly. Ohlsen also is better, but slow to regain his powers. But the rest of the crew are still down.
>
> The game season besides is drawing nearer; and, once able to shoot seal upon the ice, I have little fears for the recovery of the larger portion of our party. Perhaps I am too sanguine; for it is clear that those of us who have till now sustained the others are beginning to sink. Bonsall can barely walk in the morning, and his legs become stiffer daily; Petersen gives way at the ankles; and I suffer much from the eruption, a tormenting and anomalous symptom, which affects eight of our sick. It has many of the characteristics of exanthemata; but is singularly persistent, varied in its phases, and possibly in its result dangerous.
>
> The moral value of this toilsome month to myself has been the lesson of sympathy it has taught me with the laboring man. The fatigue and disgust and secret trials of the overworked brain are bad enough, but not to me more severe than those which follow the sick and jaded body to a sleepless bed. I have realized the sweat of the brow, and can feel how painful his earnings must be to whom the grasshopper has become a burden.

Hans reached Etah two days after leaving the brig and succeeded in killing a few walrus, some of which he was able to get to the brig on the thirteenth of April, after the party had been eight days without fresh meat.

During the following few weeks the hunting continued more or less successfully, with consequent improvement in the condition of the sick men.

As May approached preparations were made to abandon the brig and journey south across the ice along the coast to the Danish settlements. Clothing, bedding, cooking utensils and food supplies were prepared and loaded into three boats mounted on sledges which were to be drawn over the ice by the men. Transportation for the sick was planned.

The seventeenth of May was the date fixed upon for the departure from the vessel. When that day arrived Dr. Kane wrote:

> Our last farewell to the brig was made with solemnity. The entire ship's company was collected in our dismantled winter chamber to take part in the ceremonial. It was Sunday. Our moss walls had been torn down, and the wood that supported them burned. Our beds were off at the boats. The galley was unfurnished and cold. Everything about the little den of refuge was desolate.

We read prayers and a chapter of the Bible; and then, all standing silently round, I took Sir John Franklin's portrait from its frame and cased it in an India-rubber scroll. I next read the reports of inspection and survey which had been made by the several commissions organized for the purpose, all of them testifying to the necessities under which I was about to act. I then addressed the party: I did not affect to disguise the difficulties that were before us; but I assured them that they could all be overcome by energy and subordination to command: and that the thirteen hundred miles of ice and water that lay between us and North Greenland could be traversed with safety for most of us, and hope for all. I added, that as men and messmates it was the duty of us all, enjoined by gallantry as well as religion, to postpone every consideration of self to the protection of the wounded and sick; and that this must be regarded by every man and under all circumstances as a paramount order. In conclusion, I told them to think over the trials we had all of us gone through, and to remember each man for himself how often an unseen Power had rescued him in peril, and I admonished them still to place reliance on Him who could not change.

I was met with a right spirit. After a short conference, an engagement was drawn up by one of the officers, and brought to me with the signatures of all the company, without an exception. It read as follows:

"Second Grinnell Expedition,
"Brig Advance, May 20, 1855

"The undersigned, being convinced of the impossibility of the liberation of the brig, and equally convinced of the impossibility of remaining in the ice a third winter, do fervently concur with the commander in his attempt to reach the South by means of boats.

"Knowing the trials and hardships which are before us, and feeling the necessity of union, harmony, and discipline, we have determined to abide faithfully by the expedition and our sick comrades, and to do all that we can, as true men, to advance the objects in view."

I had prepared a brief memorial of the considerations which justified our abandonment of the vessel, and had read it as part of my address. I now fixed it to a stanchion near the gangway, where it must attract the notice of any who might seek us hereafter, and stand with them as my vindication for the step, in case we should be overtaken by disaster. It closed with these words:

"I regard the abandonment of the brig as inevitable. We have by actual inspection but thirty-six days' provisions, and a careful survey shows that we cannot cut more firewood without rendering our craft unseaworthy. A third winter would force us, as the only means of escaping starvation, to resort to Esquimaux habits and give up all hope of remaining by the vessel and her resources. It would therefore in no manner advance the search after Sir John Franklin.

"Under any circumstances, to remain longer would be destructive to those of our little party who have already suffered from the extreme severity of the climate and its tendencies to disease. Scurvy has enfeebled more or less every man in the expedition; and an anomalous spasmodic disorder, allied to tetanus, has cost us the life of two of our most prized comrades.

"I hope, speaking on the part of my companions and myself, that we have done all that we ought to do to prove our tenacity of purpose and devotion to the cause which we have undertaken. This attempt to escape by crossing the southern ice on sledges is regarded by me as an imperative duty, the only means of saving ourselves and preserving the laboriously earned results of the expedition.

"E. K. Kane,
"Com. Grinnell Expedition.
"Advance, Rensselaer Bay, May 20, 1855."

We then went upon deck: the flags were hoisted and hauled down again, and our party walked once or twice around the brig, looking at her timbers and exchanging comments upon the scars which reminded them of every stage of her dismantling.

. . . No one thought of the mockery of cheers: we had no festival-liquor to mislead our perception of the real state of things. When all hands were quite ready, we scrambled off over the ice together.

The long, arduous march across the weathered ice to the south began. Progress was slow. The boats could be moved only one at a time. One was dragged some distance, then the party returned for another. It was discouraging work. The men were fatigued, provisions scanty, and the ice dangerous. Christian Ohlsen died as the result of internal injuries occasioned by his efforts to prevent the loss of a boat which had broken through the ice. Fortunately they were assisted by the Eskimos of Etah who supplied them with fresh meat and at times assisted in drawing the boats and the sick. Without the aid of these people it is doubtful if any of the party would have escaped.

When the travelers reached the spot where two years previously they had cached provisions; they found their stores intact and in excellent condition. This fact greatly relieved their anxiety. With food and rest the strength of the party increased and the sick improved.

On Saturday, June 16th, Dr. Kane wrote:

> Our boats are at open water. We see its deep indigo horizon, and hear its roar against the icy beach. Its scent is in our nostrils and our hearts.
>
> We had our boats to prepare now for a long and adventurous navigation. They were so small and heavily laden as hardly to justify much confidence in their buoyancy; but, besides this, they were split with frost and warped by sunshine, and fairly open at the seams. They were to be calked and swelled and launched and stowed, before we could venture to embark in them. A rainy southwester too, which had met us on our arrival, was now spreading with its black nimbus over the bay, and it looked as if we were to be storm-stayed on the precarious ice beach. It was a time of anxiety, but to me personally of comparative rest.

The storm which was gathering broke and lasted two days but finally "died away to a calm, and the water became as tranquil as if the gale had never been." All hands were called to prepare for embarking. The boats were stowed and the cargo divided between them equally and on Tuesday the nineteenth of June, the three boats got away.

After many hard days' travel over a stormy sea, with a precarious food supply, the party reached the Danish settlement of Upernavik eighty-four days after leaving the Advance some thirteen hundred miles to the north.

From Upernavik they were transported "in the Mariane, a staunch but antiquated little bark," to Godhaven, where Dr. Kane was met by a relief expedition under the command of Lieutenant Henry J. Hartstene, U.S.N. Dr. Kane and his comrades were safely landed at New York on October 11, 1855, after an absence of thirty months.

Dr. Kane announced his safe return to the Secretary of the Navy and immediately began work on the book in which he has given the account of the expedition. It is entitled "Arctic Explorations: The Second Grinnell Expedition in Search of Sir John Franklin, 1853-54-55."[34] The book was an immediate success and the sale of the first edition is said to have brought Dr. Kane's estate $65,000.

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[34] Kane, E. K. Arctic Explorations. Childs and Peterson, Philadelphia, Sept., 1856. "R. E. Peterson, father-in-law of George W. Childs, commenced the old book business at the northwest corner of Fifth and Arch Streets, with Daniels and Smith, about 1848. This partnership did not last very long; Daniels and Smith separated from R. E. Peterson and opened a book store at No. 20 N. Sixth Street. This separation, from what cause I know not, produced bad feeling and an intense opposition in the newspapers of the time, especially in the columns of the *Ledger*. By referring to them it will be seen that a fierce opposition was carried on in the press. Mr. Peterson at this time, when opposition ran high, engaged G. W. Childs as a salesman. Mr. Childs at this time was salesman for Mr. Thompson, who kept a book store at the northwest corner of Sixth and Arch Streets. In a short time the value of the services of Mr. Childs was apparent to Mr. Peterson and he found he had got a man whose business talents could not be surpassed. He had unbounded energy and a rare discretion. The old book business cabined and confined this young Hercules, and he desired a larger sphere for his talents and suggested to Mr. Peterson the publication of books. About this time the intrepid traveler, Dr. Kane, had returned from his Arctic exploration: he was the hero of the day. Mr. Childs saw a golden opportunity and urged Mr. Peterson to make arrangements with Dr. Kane for the publication of his travels. Mr. Childs, with great energy, entered heart and soul into this great enterprise, and taking the tide at the flood, pushed it on with a resistless vigor and the result was a marvelous success. The book was illustrated with sketches from Dr. Kane's drawings by that erratic genius, James Hamilton. Those who are acquainted with art, know well that the genius of James Hamilton stands unrivalled as an artist in chiaroscuro and bold effects. The book will always

His companions in the Advance scattered to their various homes. While Dr. Kane was engaged in the preparation of his book he made many efforts to secure for them suitable recognition of their hardships. The following undated letter, now in the possession of Captain F. L. Pleadwell, Medical Corps, U. S. N., bears testimony to his efforts in their behalf:

Mr. Mallory,
U. S. Senate,
Chairman of Naval Committee.
My Dear Sir:

I prelude this letter by stating that its subject has the approval of the Secretary of the Navy to whose official report I refer you.

My recent companions in the search for Sir John Franklin were all volunteers and upon salaries utterly inadequate to their support. They return broken down by exposure and scurvy and many of them actually in debt by the expedition. It becomes my duty to ask for them the same double pay that was awarded to the former expedition and which has not ungenerously been given in similar instances of special or peculiar service. I believe that the tone of public sympathy would make such a measure acceptable to the community and I ask you, should your own views accord with mine, to introduce a clause to that effect in the general appropriation bill.

I must exclude my own name from this request. I am acting as the representative of my comrades, and am unwilling to make my position liable to the misconstruction of being myself a claimant for pecuniary reward. None the less however would I gratefully remember your action in behalf of my comrades, and I desire to say that I would remember your care for them as a personal obligation to myself. I need not say to you that I consciencously think this double pay ought to be awarded to the members of my party, otherwise I would not advocate it.

If you should decide to act favorably upon this request, I will forward to you a draught of the bill, and if necessary come on to Washington to promote its passage. My own name being unconnected with it I can do this without indelicacy.

With a tender of acknowledgements from Judge Kane and my grateful recognition of your instrumentality in promoting the recent searches for my party, I am faithfully,

Your friend and Servt.
E. K. Kane

His endeavors were without effect as the extra pay and allowances made to the officers and men in the exploring expedition to the South Seas and granted also to the members of the DeHaven expedition were never extended to the poor fellows of the Kane party.

Many honors came to Dr. Kane. Resolutions duly honoring the enterprise and achievements of the expedition were passed by the legislatures of his native state, Pennsylvania, of New Jersey and of Maryland. A gold medal was voted by the legislature of New York. The Royal Geographical Society of London gave him a gold medal and an honorary membership. The Queen's medal designed for Arctic explorers was presented and a testimonial was tendered by the British residents of New York.

Worn with the fatigue of his labors and suffering from the distress of his cardiac affliction, on the tenth of October, 1856, he sailed for England accompanied by the faithful Morton who had gone with him to the far north and was to accompany him until his death.

Immediately before leaving New York he made his will. He was at the time entirely unaware of the large pecuniary results which his last book was to yield and did not consider that he had much of an estate. There is no public record that he ever married but there is extant a curious little volume entitled "The Love-life of Dr. Kane" containing the correspondence and a history of the acquaintance, engagement

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find a place in Arctic discovery and stands second to none in artistic illustrations. I am not sure but believe that the masterly management of Mr. Childs in this book caused Mr. Peterson to accept him as his partner." Brotherhead, W. Forty years among the old booksellers of Philadelphia, Phila., 1891.

and what the author claims to be evidence of a common-law marriage between Elisha K. Kane and Margaret Fox, a member of a celebrated family of spiritualists. No mention of Miss Fox, however, occurs in the will.

He arrived in England a sick man. While in London he visited the office of the Admiralty upon invitation, and called once or twice upon Lady Franklin, but the fogs of the city disturbed him and he grew rapidly worse.

On the fifteenth of November he wrote what appears to be his last letter. It is addressed to his friend, the late Dr. S. Weir Mitchell of Philadelphia.

My dear Friend Weir: Perhaps it would comfort our dear people at Fern Rock[35] if you would mention that I have seen and consulted Dr. Watson[36] with Sir Henry Holland.[37] The former auscculted my lungs and pronounced against any vice other than the cold on the chest which now so depresses me. My inability to throw it off is explained by my extreme want of power and this wretched land of fogs.

They all urge the "exaltation" of vital function to be expected from a warmer climate.

Talk over this, and add your excellent father[38] to the consultation. You see the effort with which I write this note. I wish you could see the overflowing kind feelings to you and yours with which I close it.

Your friend,
E. K. Kane

London, November 15, 1856.

After consulting Dr. Watson, Dr. Kane had thought of going to Sicily or to the south of France, but Cuba was decided upon, as equally promising and nearer home. On the seventeenth of November Dr. Kane and Morton sailed from Southampton on a vessel bound for St. Thomas, which he reached December second. He remained there, waiting for a passage to Cuba, until the twentieth. On December twenty-sixth he landed at Havana where he was met by members of his family who had gone out to meet him. He was very ill, having suffered a slight apoplectic stroke after leaving St. Thomas.

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[35] His father's residence near Philadelphia.

[36] Sir Thomas Watson (1792–1882), an eminent English physician, studied medicine in London and Edinburgh. He received his M.D. from Cambridge in 1825 and was in active practice in London from 1825 to 1870. He was physician to the Middlesex Hospital, London, 1827–43; professor of medicine at University College, 1828–31; at King's College 1831–40. He was created a baronet in 1866. His published lectures on the "Practice of Physic," 1843, continued for twenty years to be the chief English text book on medicine.

[37] Sir Henry Holland, an English physician and author, was born at Knutsford, Cheshire, October 27, 1788. His maternal grandmother was the sister of Josiah Wedgwood, of pottery fame, whose grandson was Charles Darwin. In 1806 he began the study of medicine in the University of Edinburgh, where he graduated in 1811. After several years spent in foreign travel, he began practice in London in 1816. In that year he was elected F.R.S., and in 1828 F.R.C.S. He became physician in ordinary to Prince Albert in 1840, and was appointed in 1852 physician in ordinary to the queen. In April, 1853, he was created a baronet.

He had a notable career. At an early period of his practice he resolved to devote to his professional duties no more of his time than was necessary to secure an income of £5000, and also to spend two months of every year in foreign travel. By the former resolution he secured leisure for a wide acquaintance with general literature and for more than superficial cultivation of several branches of science, and the latter enabled him to journey to places little frequented by European travelers. He died on his eighty-fifth birthday, October 27, 1873.

[38] John Kearsley Mitchell, father of S. Weir Mitchell, the eminent writer and investigator of medical subjects, was born in Shepherdstown, Virginia, May 12, 1793, and died in Philadelphia, April 4, 1858. His father, a physician of Scotch birth, sent him at the age of eight to be educated in Scotland. Returning in 1813, he began to study medicine with Dr. Kramer of Jefferson County, Va., entered the University of Pennsylvania Medical School under Dr. Nathaniel Chapman and graduated in 1819. After making three voyages to China and the East Indies as a ship's surgeon, he settled in Philadelphia in 1822 and began to practice medicine. In 1824 he lectured on the institutes of medicine in the Philadelphia Medical Institute; in 1826 he held the chair of chemistry in the same school, and in 1833 was selected to lecture on chemistry applied to the arts, in the Franklin Institute. In the spring of 1841 he was called to the chair of theory and practice in the Jefferson Medical College, and at different times was visiting physician to the Pennsylvania Hospital.

On February tenth he had another stroke and on the sixteenth he passed away so gently that the watchers by his bedside were scarcely aware of his departure.

He was honored at his death no less than he had been during his life. His body was borne to the Plaza de Armas in Havana where it was received by the officials of the city with appropriate ceremonies. It was conveyed to the steamer Catawba and brought to New Orleans. Here the body of Dr. Kane was received with great solemnity. During the progress up the Mississippi and Ohio Rivers to Cincinnati, and along the route of the railroad to Philadelphia, Masonic orders, medical societies, militia organizations and civic associations gathered to render their respects to one whose name was then familiar to everybody. Up to this time no one had been thus honored by the people of the United States.

The newspapers echoed the general mourning and the legislatures of many states adopted resolutions on his death.

To quote from the *Philadelphia Evening Journal* of March 12, 1857:

> The long procession of mourners, the crowded yet silent streets through which they move, the roll of muffled drums, the booming of minute-guns, the tolling of bells, the craped flags at half-mast, and the solemn pageantry of the scene, proclaim that it is no ordinary occasion which has called forth these impressive demonstrations of public respect.

Upon the arrival of Dr. Kane's body in Philadelphia, on the afternoon of Monday, March eleventh, it was conveyed under escort of the First City Troop to Independence Hall where it lay in state until noon of Thursday, March fourteenth. The coffin was then borne by a detachment of seamen of the U. S. Navy down the center walk of Independence Square to Walnut Street where it was placed upon a funeral car especially prepared for the occasion and carried to the old Second Presbyterian Church on North Seventh Street. Here an impressive funeral service was held. The body was then escorted to Laurel Hill Cemetery and placed in the Kane family vault.

> The nobleness of his self-devotion, the heroism of his contests, the results of his exertions, the cause of his early death, have placed his name among those of whom it is justly said, *Dulce et decorum est pro patria mori.*

Many men have had a worse epitaph: few men have deserved a better one.

THE SYMBOLISM OF THE GOLD-HEADED CANE*

By ISADOR H. CORIAT, M.D.

BOSTON, MASS.

ONE of the most delightful and interesting contributions to medical belles-lettres, is the volume entitled "The Gold-Headed Cane," written by Dr. William Macmicheal and first published in 1827. This volume which has become a literary classic, has gone through several editions.[1] At the end of the original contribution it is stated:

> But I have done. It has already been explained how I came to occupy my present position; and having once passed under the splendid portico of the New College, I am afraid there is no chance of my ever emerging from the dark recess I occupy in its library.
>
> The publication of the First Edition of my history has at least procured for me one of the advantages I ventured to anticipate: for having become to a certain degree an object of curiosity, my seclusion has occasionally been broken in upon by a temporary exhibition to a visitor. Upon the whole, however, my leisure has been so little interrupted, that I have had abundant time to recollect more fully the various scenes, which I have witnessed; and it is to be hoped, that these additional memoirs will be given to the world by the Registrar of the College with the same scrupulous regard to truth that formed the sole merit of my first imperfect narrative.

This wish on the part of the Cane, who had previously stated in a most naïve manner "that it was not till after the acquisition of my head that I became conscious of existence and capable of observation" was admirably fulfilled nearly sixty years later by Dr. William Munk, in the edition previously referred to and forty-five years after Dr. Macmichael's death.

It is not proposed to deal with the literary merit or the stirring scenes of medical and political history which are so charmingly related by the Cane as a personal observer, but rather with the deeper symbolism of the cane and its relation to the history of medicine, as emblematic of the physician himself. It can be stated, without great fear of contradiction, that few who have read this book have been aware of the real underlying meaning of the gold-headed cane, other than that it still is preserved in the College of Physicians of London and was carried successively by Drs. Radcliffe, Mead, Askew, Pitcairn, and Baillie.

Historically the physician's cane is linked up with the wig and the ring as a symbol of profound learning, wisdom and power. As is stated by Jeaffreson[2]: "Next to his cane, the physician's wig was the most important of his accouterments. It gave profound learning and wise thoughts." According to Sozinskey[3] the ring is referred to in one of the spurious Hippocratic works and "was viewed generally in the light of an amulet or talisman. The engraving it bore had much to do with its supposed virtues, and the stone also gave it special value. Red carnelian was believed to be curative of hemorrhage, and coral of nervous affections."

At one time the gold-headed cane was believed to be the necessary accompaniment of the physician and the famous cane in question was carried by a number of the most eminent and popular of London physicians. The cane, as will be subsequently shown, seems to be linked up historically and also related symbolically to the herald's staff and caduceus of Hermes, the wand of Aesculapius, the sacred wands of certain primitive people, the mystic wands of fairy tales and of magicians, and even to the staffs of constables and sheriffs as emblematic of power and omnipotence.

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*Read before the Boston Medical History Club, January 15, 1923.

[1] First published in 1827, it was reprinted and amplified by 88 pages the succeeding year. In 1884, there appeared a third edition by Dr. William Munk, who added three chapters to the original five, bringing the autobiography of the Cane from the obscurity of a corner closet of the library, where it was deposited in 1824, up to about fifty years later, when it was placed in a glass case in the library of the College of Physicians. A fourth edition which is a reprint of the original 1828 edition appeared in 1915 (Paul B. Hoeber, N. Y.) and contained an introduction by Sir William Osler and a preface by Dr. Francis R. Packard.

[2] Jeaffreson, J. Cordy. A book about doctors, London, 1875. Chap. i, Something about sticks and rather less about wigs.

[3] Sozinskey, Thomas S. Medical symbolism in connection with historical studies in the arts of healing and hygiene, 1891.

The psychological interpretation of the symbolism of the gold-headed cane which it proposed to present, was in part dimly anticipated by earlier writers on medical symbolism.[4] Jeaffreson states as follows:

> The physician's cane is a very ancient part of his insignia. It is now disused, but up to very recent times no doctor of medicine would have presumed to pay a professional visit, or even to be seen in public, without the mystic wand.
>
> Long as a footman's stick, smooth and varnished, with a heavy gold knob or cross-bar at the top, it was an instrument with which, down to the present century, every prudent aspirant to medical practice was provided. The knob in olden times was hollow and contained a vinaigrette which the man of science always held to his nose when he approached a sick person so that its fumes might protect him from the noxious exhalations of his patient. The stick itself was doubtless a relic of the conjuring paraphenalia with which the healer, in ignorant and superstitious times, always worked upon the imagination of the credulous. Just as the ℞ which the doctor still affixes to his prescriptions is the old astrological sign of Jupiter,[5] so his cane descended to him from Hermes and Mercurius. It was a relic of old jugglery and of yet older religion, one of those baubles which we know well where to find but which our conservative tendencies disincline us to sweep away without some grave necessity. The charming stick, the magic Aesculapian wand of the medicine man, differed in shape and significance from the pole of the barber-surgeon.

Referring to the latter, it appears that this phlebotomist's staff was linked up both historically and symbolically with the physician's cane and Jeaffreson in addition suggests that possibly in ancient times the physician's cane and the surgeon's club were used actively.

> For many centuries fustigation was believed in as a sovereign remedy for bodily ailments as well as moral failings and a beating was prescribed for an ague as frequently as for picking and stealing.
>
> This process Antonius Musa employed to cure Octavius Augustus of sciatica. Thomas Campanella believed that it had the same effect as colocynth administered internally. Galen recommended it as a means of fattening people. Gordonius prescribed it in certain cases of nervous irritability.[6]

On the whole such customs, avowedly for therapeutic purposes, may be merely incidents in the history of flagellation, into which there enter, as is well-known, strong sadistic and masochistic components.[7]

In referring to the gold-headed cane Sozinskey[8] says in part:

> What was its history? Did it come down to our time as a representative of the one placed in the hand of the god of medicine by the artists? . . . But whatever its origin may have been, it was almost universally used by physicians until recently.
>
> The physician's cane was generally smooth, of moderate weight and with a gold head in the form of a knob. A gold head! What was the meaning of that?[9] Was it used because of the bearer's reputed love of the precious metal?

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[4] Jeaffreson and Sozinskey. *Loc. cit.*

[5] Sozinskey. *Op. cit.*, pp. 133–134. Lawrence, Robert Means, Primitive psychotherapy and quackery, pp. 155–158. For further details of this symbolism.

[6] Jeaffreson. *Loc. cit.*

[7] Anon. The history of flagellation among different nations.

Cooper, Wm. M. A history of the rod, 1869. Chap. xxii, The reputed curative and medicinal powers of the rod.

Eulenberg, E. Sadismus and masochismus, 1902. This latter work contains a very complete bibliography of sadism and masochism up to the year of publication.

[8] *Loc. cit.*

[9] Later in the course of this paper, the symbolic significance of gold will be discussed.

Chaucer says, and with a charming casuistry, in the famous description of his doctor:

> For gould in physike is a cordiale:
> Therefore, he lovede gould in special.[10]

It may then, have been its medical virtues, virtues still occasionally lauded by therapeutic prospectors, which suggested the use of it in the cane. But after all the desire to make a good appearance may have been the reason for its use.[11]

The head of the cane was not always solid. On the contrary, it was often, like many a one, doubtless, who carried it, hollow. In the cavity, it was customary to keep something medicinal, such as ammonia. About this there is much mystery in the minds of the populace . . . Something of the kind is still supposed by many to be done. The idea was entertained by more than a few, that within the head of the cane existed, in some cases at least, a familiar spirit which gave the owner extraordinary power. Paracelsus was reputed to have within the pommel of his long sword, which he used instead of a cane, a genius, in the form of a bird, which enabled him to perform wonders.

It appears then that there are two aspects to the meaning of the gold-headed cane. First, as a delightfully gossipy and well-written account of stirring scenes in the medical and political world of the seventeenth, eighteenth and nineteenth centuries and secondly, a rather deeper implication of the real symbolism of the cane.

The main tendency of medical symbolism, as has been previously shown[12] is an expression of power, an attempt to exalt and reinforce the universal narcissism or self-love of the physician. The more psychanalysis penetrates into the phylogenetic origin of symbols, the more does it confirm that they stand out in the mental life of every individual as a precipitate in the unconscious of the experiences of previous generations. Symbolism in medicine does not differ from the general symbolism in other fields of human knowledge, such as folklore, ethnology and anthropology. It is a substitute for some other idea, an expression for what is more or less hidden, particularly in the fields of power, sex or excrements of the human body. It is a form of an idea or thought which is representative of unconscious material and possesses a universal significance, the individual remaining unaware of the true meaning of the symbol employed until it is interpreted. The tendency of the primitive mind, which persists in the unconscious of all civilized beings, is to think in symbols.

The meaning of symbols is independent of the individual interpretation of the psychanalysts for, not only is symbolism universal, appearing in all other departments of human knowledge and in the whole development of civilization, but taking the gold-headed cane in particular, the previous quotations demonstrate how strikingly accurate was the symbolic interpretation long before the discovery of psychanalytic principles. Thus symbols are not artificially made; they are not invented; they are merely discovered and elucidated.

Like the manifest content of a dream or like the symptoms of a neurosis, the gold-headed cane carries deeper implications than appear on the surface or by the mere reading of the delightful volume devoted to a particular cane. The gold-headed cane is a symbol and stands out in the history of medicine as sort of an unconscious precipitate of the usages of previous generations.

In the first place, the cane was a bit of magic, a charm, a sort of an omnipotent instrument which had power over evil; in this case, power over infection, to avoid infection because it held an elixir whose purpose was to protect the physician. To quote from one of the subsequent chapters of the volume:[13]

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[10] It seems strange that Chaucer, in the description of the "Doctour" in the Prologue of the "Canterbury Tales," does not mention a cane, although he clearly describes other medical symbols, such as the physician's dress, his astrolabe and his "magik naturel."

[11] This is merely a rationalization of the true meaning of the gold.

[12] Coriat, Isador H. An ancient Egyptian medical prescription for hysteria. ANNALS OF MEDICAL HISTORY, III, i, 12, 1921.

The psychology of medical satire. *Ibid.*, III, iv, 402, 1921.

Medical magic. *Ibid.*, IV, iii. 291, 1922.

> The Serjeant regarded me for some moments in silence and as it seemed to me with interest; and on handing me again to the President, asked him if my head was not unusual in its shape, and had not the physician's cane generally, not a crook or cross bar as I have, but a rounded top or knob.
>
> "It had," replied the President, "but this cane was made for Dr. Radcliffe, and Radcliffe, you must know, was a rule to himself; in many respects he was unlike any of his contemporaries, and as he was at all times impatient under the conventional usages of his order, it was perhaps neither strange nor unseemly that he bore a cane unlike those of his brethren. The physician's cane proper had a rounded knob or head, often of gold, sometimes silver, but in later times generally of ivory. In earlier times this knob was perforated with holes, and it had within, a cavity or chamber for aromatic or Marseilles vinegar—*le vinaigre de quatre voleurs*, of sovereign efficacy against all pestilences.[14] The head of the cane was thus a *vinaigerette*, which the doctor held to his nose when he went into the sick chamber, so that its fumes might protect him from contagion and other noxious exhalations from his patient.

Thus the cane in this particular instance, becomes historically linked up on the one hand with the elixir of life of the alchemists and symbolically on the other hand with the caduceus.

The caduceus itself is older than Greek or Roman art and is associated with Hermes and Aesculapius, the gods of health and fertility. The twin serpents are symbols of life and death, the two things for which the ancient cult of Aesculapius and the modern physician stand. Historically too, as in the episode of Aaron's rod before the Egyptian Pharaoh, the cane and the serpent become interchangeable.

The staff and the serpent of Aesculapius are of special significance and possess certain historical and symbolical relations. The serpent enwreathing the staff became the characteristic symbol of the god of medicine through certain types in ancient sculpture, as in the statues of Aesculapius at Pergamus and in such later productions as gems of the Roman period.

This staff of Aesculapius is of importance and deserves some brief consideration, as it is linked up with the gold-headed cane of the physicians and the pole of the barber-surgeons of the Middle Ages. It is believed by some that the Aesculapian staff denoted the perambulatory calling of the physician, by others, that it was a sort of mystical wand of healing. Aesculapius was the son of Apollo, and it seems that the symbol of Apollo was transferred to his son. This symbol was the *Omphalos* (the navel or umbilicus) in the form of a conical stone or post. This post or pillar was of phallic significance, for as Müller states:[15] "In the earliest times, a conical pillar placed in the street and called Apollo Agyicus, sufficed to keep in remembrance that protecting, health-bringing power of the god."

The cane is also a symbol of the office of the physician. For the healing divinity of the Babylonians and Assyrians from which the conception of Aesculapius may have partly sprung, either as imitation or as a form of unconscious symbolic thinking, carried a reed when attending to his duties. The staff in the hand of the Egyptian Thoth,[16] the father of medicine, may have had a similar meaning.

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[13] Edition of 1884, edited by Dr. William Munk, pp. 199–200.

[14] The explanatory note states as follows: "The name of this preparation and its repute as a prophylactic in contagious fevers, is said to have arisen from the confession of four thieves, who during the plague at Marseilles, plundered the dead bodies with perfect security, and who, on being arrested, stated, on condition of their being spared, that the use of an aromatic vinegar had preserved them from the influence of contagion. Thence onwards it was known at Marseilles, and generally in France, as *le vinaigre de quatre Voleurs*."

[15] Ancient art and its significance.

[16] Knight, Payne. The symbolical language of ancient art and mythology, 1876. Thoth is identical with Aesculapius, p. 10.

The serpent enwreathed around the staff of Aesculapius became in time the expressive medical emblem or symbol of the caduceus. Here again we see a mixed sexual significance, the phallic symbol of the Aesculapian staff which resembles a gold-headed cane in miniature, and the two serpents, which were delineated as male and female, in the act of copulation.

In addition, the cane is the symbol of power, as with a king whose special emblem, the scepter, becomes the symbol of regal authority, so the gold-headed cane may be interpreted as the symbol of medical authority. This idea of power and potency arose from the well-known phallic implication of the cane. The omnipotence of the gold-headed cane of the physician is a piece of medical magic, like a fairy wand, for at its touch disease vanishes, infection is swept aside and it thus becomes a symbol of the power of the magic art of medicine.

In fact, in primitive society the orders of the medicine-men gradually became kingly, the magical functions of the former thus falling more and more into the background.[17] According to Osler:[18] "Medicine took its origin in magic, that 'spiritual protoplasm,' as Miss Jane Harrison calls it." The magicians or medicine-men constituted the oldest artificial or professional class in primitive society, and only later, in the evolution of civilization, did these medicine-men abandon sorcery for science. But as I have previously shown in my paper on "Medical Magic" certain of these residuals remained and were transmitted in a symbolized form as medicine evolved into a science. The magic wand of the medical sorcerer gradually became the gold-headed cane of the medieval and modern physician.

The gold has another significance, in that it is a symbolic replacement of the principle of pleasure. Furthermore according to the tenets of alchemy,[19] male activity is derived from gold, the same as female from silver. Gold was also the symbol of the sun, the all-fertilizing divinity which was synonymous with Apollo, and significantly, Apollo was the father of Aesculapius.

The King is an unconscious symbol for the father[20] and as the father had to be respected, so the King's scepter became a symbol of respect. It is not stretching the analogy too far, to add also, that the gold-headed cane had, as one of its purposes, a respect for the power of the physician.

Thus the gold-headed cane became a sort of a symbolic carrier of the power of the physician or the immortal transmitter or bearer of power as it passed from one physician to another. Historically it was emblematic of the physician's profession but beneath this there was a hidden symbolism, whose meaning stretched back to the beginnings of medicine in magic and thus unconsciously betrayed the secret of therapeutic power. Such transitions from literal meaning to veiled symbolism are very frequently encountered in the development of civilization and culture. To cite only one example of these age-old mysticisms, we have the throwing of rice at a newly married couple which symbolizes fertility.

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[17] See on this point Frazer's "Golden bough," vols. I, II. The magic art and the evolution of kings.

[18] Osler, William. The evolution of modern medicine, New Haven, 1921.

[19] Silberer, Herbert. Problems of mysticism and its symbolism, 1917.

[20] In fact in former times the czar of Russia was referred to as the "little Father" and today Germany is called "The Fatherland."

A DESCRIPTIVE LIST OF INCUNABULA

INCUNABULA IN THE LIBRARY OF THE MEDICAL SOCIETY OF THE COUNTY OF KINGS, BROOKLYN, N. Y.

In the following list the ruling of "Hain" has been adhered to, only those works published in the fifteenth century being included as "incunabula." The form of arrangement of author's names and bibliographical description as given in Hain's "Repertorium Bibliographicum" for use in the comparison and identification of editions or publications has been followed. The list is arranged alphabetically by authors and chronologically when there are several editions of a work.

Charles Frankenberger,
Librarian.

1. Albertus Magnus. [Liber de muliere forti venerabilis.] [F. 1a tit:] Liber de muliere | forti venerabilis domini Alberti magni *** [F. 1b:] Manuductio in tabula | *** [F. 149b:] § Explicit liber venerabilis d[omi]ni Alberti magni ordinis | predicato[rum] de muliere forti intitulatus. iam primu in lucem | prodiens. *** Impressus Colonie opa atqz impensis ho- | nesti viri Henrici Quentell ci | uis euisdem. Nonis maii. An | no domini Millesimo quadringentesimo nonagesimonono. | [F. 150a:] Incipiunt orationes uenerabilis doctoris Alberti magni. *** [F. 160a:] Finis. Cedite fallaces. ***
[160] ff sm. 4°. Colonie, Henrici Quentell, 1499.
[Hain no. 465.]

2. Anglicus de Gatisden, Johannes. [Rosa anglica practica medicinae.] [F. ia tit:] Rosa anglica p[r]actica me | dicine a capite ad pedes. | [F. 2a:] Nicolaus scyllatius siculus magnifico ac p[rae] stantissimo Amb[r]osio varisio rosato ducali phi- | sico ac [con]siliario sapie[n]tissimo. S. D. | [F. 177b:] Papie 1492. die. 24. Ianuarij. | Ioa[n]nesantonius birreta i[m]p[r]essioni tradidit. |
[177] ff F°. Papiae, Joannes Antonius de Biretis, 1492.
[Hain no. 1108.]

Ars Moriendi.
See—Hieronymus, B.

3. Avenzohar, Abhumeron. [Theicrisi dahalmodana vahaltadabir c. Colliget Averrois.] [ff 1 missing] [F. 2a:] § Incipit liber theizir dahalmodana vahaltadabir *** [F. 42b:] § Hieronymus Surianus physicus domini magistri Jacobi suriani de Arimino | Artium ac medicine docto[r]is p[r]eclarissi [sic] fili[us] Lecto[r]i Salute[m] plurimam dicit. | *** [F. 43a:] § Incipit liber de medici[n]a Auerroys: qui dicitur colliget: | *** [F. 102b:] *** Imp[r]essum Uenetijs per magistrum Otinum papiensem | de Iuna. Anno domini nostri iesu ch[r]isti. MCCCCXCVIJ. de | cimo kalendas ianuarias. ***
[103] ff F°. Venetiis, Otinus de Luna, Papiensis, 1497.
[Hain no. 2188.]
Imperfect. ff 1 missing.

Averroes Cordubensis Colliget
See—Avenzohar, Abhumeron.

4. Avicenna. [Canonis lib. I. et III. et libri IV.] [Lib. I missing.] [Lib. III, partly missing.] [F. ia tit:] Tabula in prima fen tertij cano | nis Auicene principis cu expla | natione Iacobi de partibus | docto[r]is famosissimi. [Lib. IV. F. 1a tit:] Fen prima quarti canonis Auicene | principis cu explanatioe Iacobi de | ptibus medicine facultatis professo | ris excelle[n]tissimi et tabula eiusdem. [In fine:] § Habes lector optime Magistri iacobi de partibus medico[r]um sui temporis facile peritissi | mi in Auicenna: *** § Imp[re]ssuz est aut hoc opus lugduni (cu puilegijs in epta declarat) incipiete qde ac pcura | te egregio viro. M. iohanne Trechsel alemano artis imp[re]ssorie pitissimo: cui' aia in paceqescat | [con] summate aut. M. iohane Clein itide alemano nec min perito. Anno christiane pietatis mil | lessimo quadringentesimo nonagesimo octauo nono kalendas ianuarij. Sit laus deo. ***
[293] ff F°. Lugduni, Johannes Trechsel, 1498.
[Hain no. 2214.]
Imperfect. Lib. I and part of Lib. III missing.

5. Bartholomaeus de Glanvilla, Anglicus, Ordin. Minor. [De proprietatibus rerum.] [F. ia tit:] P[r]oprietates Rerum do. | mini bartholomei anglici | [Ad finem:] Explicit liber de p[ro]p[r]ietatibus rerum | editus a fratre Bartholomeo anglico o[r] | dinis fratrum mino[r]um. Anno domini | Mcccclxxxviij. kale[n]das vero Iunij. xij. |
[326] ff F°. [Argentorati, Johannes Pryss], 1488.
[Hain no. 2507.]
Imperfect. Following four original folios missing, replaced by manuscript copies: ff a2, a7, i2, i5.

6. Boethius, Anicius or Annius Manlius Torquatus Severinus. [De consolatione philosophie.] [F. 1a:] Incipit tabulas up libris Boetij de [con] so latione philosophie sm o[r]dine alphabeti. [F. 5a:] Eximij p[r]eclariqz docto[r]is thome sup lib[r]is Boetij de co[n]solatu philosophico comentum feliciter Incipit. [In fine:] Anicij To[r]quati Seuerini Boetij viri nois celeb[r]itate q, memo[r]adi | textus de philosophie [con]solatone cum editione cometaria beati thocum de | aqno ordis p[re]dicato[rum]: Anthonij koburgers ciuis inclite Nurnbergesiu | v[iri]bis industria fabrefactus: finit feliciter. Anno a natiuitate christi. | Millesimo. ccccIxxxiij. postera die post philippi et iacobi apio[rum].
[71] ff F°. Nurnberg, Antonius Koburger, 1483.
[Hain no. 3376.]

Boetius
See—Boethius

7. Cato, Dionysius. [Moralissimus Cato cu elegantissimo comento.] [F. 1a tit:] Mo[r]alissimus Cato cu | elegantissimo comento. [F. 2a:] § Incipit liber de doctrina Catonis am | pliatus per sermones rheto[r]icos ** mo[r]a | les. per fratrem Robertu de Euremodio | monachum Clareuallis. [In fine:] Hic finem aspice Catonis viri | mo[r]alissimi: ** in via mo[r]um fa | ne grauissimi Cum commento | fratris Roberti de euromodio | monachi Clareuallis: Ta ver | bo[r]um o[r]natu limato: q̃z fente | tiarum grauitate p[r]eclaro: vt | ex Iouis cereb[r]o videat ema | natu: Imp[r]essum Basilee deci | maquarta die Iunij. Anno do | mini. M.cccc.lxxxvi.
[47] ff sm. 4°. Basilee, 1486.
[Hain no. 4719.]

8. CAULIACO, GUIDO DE. [Cyrurgia] [F. ia tit:] Cyrurgia Guidonis de cauliaco | Et Cyrurgia Bruni | Thedo[r]ici Rogerii | Rolandi Bertapalie | Lanfranci | [F. 267a:] § Recollecta[rum] egregu docto[r]is Magri Leonardi Ber | tapalie sup q̃rto canois Auicene finis. Uenetijs Imp[re]ssa | ru ma[n]dato ** expe[n]sis Nobilis Uiri D[omi]ni Octauiani Scoti | Ciuis Modoetiesis Cura ** ante Boneti Locatelli Ber- | gome[n]sis. Anno a salutifero virginali partu. Millesimo q- | [ua] dringetesimo nonagesimo octauo. Undecimo kaledas | Decemb[r]es.

[267] ff F°. Venetiis, Octavianus Scotus, Modoetiensis per Bonetum Locatellum, Presbyter Bergomensis, 1498.

[Hain no. 4811.]

9. CELSUS, CORNELIUS. [De medicina libb. viii.] [F. 1a:] AVRELII CORNELII CELSI MEDICINAE LIBER PRI- | MUS INCIPIT. | [F. 144b:] Cornelii celsi de medicina Liber finit. Impressum Mediolani Per Leo | nardum pachel & Vlderichum sinczenzeler. diligantissime emenda | tum. Anno salutis. M.-CCCC.LXXXI. |

[150] ff F°. Mediolani, Leonardus Pachel et Ulricus Scinzenzeller, 1481.

[Hain no. 4836.]

Imperfect. Title page missing.

10. CELSUS, CORNELIUS. [De medicina libb. viii.] [F. ia tit:] CORNELIVS CELSVS | [F. 2a:] AVRELII CORNELII CELSI MEDICINAE LIBER PRIMVS IN-ICIPIT. | [F. 94a:] Impressum Venetiis per Philippum pinzi. Sumptibus d[omi]ni. Benedicti fontana. Anno | d[omi]ni M.cccc.xcvii. die. vi. Mai. |

[94] ff F°. Venetiis, Benedictus Fontana per Philippum Pintium de Caneto, Mantuanus, 1497.

[Hain no. 4838.]

GADDESDEN, JOHANNES
See—ANGLICUS DE GATISDEN, JOHANNES

GLANVIL, BARTHOLOMEUS
See—BARTHOLOMAEUS DE GLANVILLA, ANGLICUS

GLANVILLA, ANGEL. BARTH.
See—BARTHOLOMAEUS DE GLANVILLA, ANGLICUS

11. GORDONIO, BERNARDUS DE, Medic. Montis Pessulani. [Practica dicta lilium medicinae.][F. 1 vacat.] [F. 2a:] In nomine dei miserico[r]dis incipit | p[r]actica excelle[n]tissimi medicine monar | ce domini magistri Bernardi de Go[r]= | donio dicta Lilium medicine. [F. 205b:] Imp[r]essa Lugduni per Anthoniu[m] la[m]bil lionis [et] Marinu[m] sarraceni: co[n]socio[r]um | Anno d[omi]ni. 1491. die. 2. maij. Ad laudem | o[mn]ipote[n]tis dei tociusq[ue] curie celestis. ame[n]. | *** [F. 206 vacat.].

[206] ff F°. Lugduni, Antonius Lambillionis et Martinus Saracenus, 1491.

[Hain no. 7797.]

Imperfect ff 163–166 missing; replaced by manuscript copy.

12. GORDONIO, BERNARDUS DE, Medic. Montis Pessulani. [Practica dicta lilium medicinae. [F. 1a tit:] Tabula P[r]actice Go[r]donij | Dicte Lilium Medicine. | [F. 1b:] § Tabula particularu Tractatuu | & Capitulo[r]u[m] huius p[r]actice. | [F. 5a tit:] P[r]actica Go[r]doninij dicta | Lilium Medicine | [F. 6a:] § In nomine dei miserieo[r]dis incipit | p[r]actica excellentissimi medicine mo- | narche d[omi]ni magistri Bernardi de Go[r] | donio dicta Lilium medicine. | [F. 271a:] § Expleta est p[r]actica excellentissi- | mi artium & medicine docto[r]is domi- | ni magistri Bernardi de Go[r]donio di- | cta Liliu[m] medicine. *** § [Original text cut out of our copy and replaced by manuscript notation as follows: Impressa Ue | netijs per Ioannem & Gregorium de | Gregorijs fratres. Anno d[omi]ni. 1496. die | 16. Ianuarij. Ad laudem omnipotetis | dei totiusq[ue] curie celestis. Amen.]***

[271] ff. 4°. Venetiis, Johannes et Gregorius de Gregoriis de Forlivio, 1496.

[Hain no. 7799.]

GUY DE CHAULIAC
See—CAULIACO, GUIDO DE

13. [Hieronymus, B.] [Opuscula varia.] [Our copy begins with:] § Tabula dispositorij artis moriendi. | [In fine:] *** nisi certitudo | sufficiens esset |

[21] ff F°. [S. I. et a., sed Augustae Vindelicorum, Günther Zainer de Reutlingen, circa 1470.]

Imperfect. All pages preceding the above are lacking in our copy.

JOHANNES GADDESDEN
See—ANGLICUS DE GATISDEN, JOHANNES

14. KETHAM, JOHANNES DE. [Fasciculus medicinae.] [F. 1a tit:] PETRVS | DE | MONTAGNANA | [F. 2a fig. rotunda, in cujus medio haec:] Iste e modus | iudicandi uri | nas p colores | earudem. | *** [F. 2b:] § Incipit fasciculus medicine compositus p[er] excel- | lentissimum artium ac medicine docto[r]um dominuz | Ioannem de Ketham Alamanum: tractans de ano | thomia & diuersis infirmitatibus: & co[r]poris huma | ni: cui annectuntur multi alij tractatus per diuersos | excellentissimos docto[r]es compositi. Necnon ano- | thomia Mundini. |F. 34b, col. 2:] § Explicit fasciculus medicine in quo [con]tinent: vz. | *** § Imp[r]essum Uenetijs per Ioannem & Grego[r]iu | de Gregorijs fratres. Anno domini. M.ccccc. die | xxviij. Martij.

[34] ff il. F°. Venetiis, Joannes et Gregorius de Gregoriis de Forlivio, 1500.

[Hain no. 9776.]

15. MAGNINUS MEDIOL. [Regimen sanitatis.] [F. 1a tit:] EXCELLE[N]TISSIMI MAGNINI ME | DIOLANENSIS MEDICI FAMO= | SISSIMI REGIMEN SANITATIS. | [F. 2a:] Tabula Alphabetica. | *** [F. 4a & b vacat.] [F. 5a:] P[r]ologus. | Regime[n] sanitatis Magnini mediolane[n]sis me= | dici famosissimi Attrebatensi episcopo directum | feliciter incipit. | [F. 90a. Ad finem:] Regime[n] sanitatis Magnini mediolensis medici exp[er]tissimi. Op[us] | equidem no[n] paru vtile omni cu[m] dilige[n]tia in hoc volumen redactum | Finit feliciter. Imp[r]essum Basilee per Nicolaum Kesler &c. |

[94]ff 4°. Basilee, Nicolaum Kesler, [circa 1493.] [Hain no. 10486.]

MONDINO DEI LUZZI
SEE—MUNDINUS

16. MUNDINUS, MEDIC. BONON. [Anatomia.] [F. 1a tit:] Anathomia Mu[n] | dini Eme[n]data p | docto[r]e[m] mele[r]stat | [F. 2a:] Incipit Anothomia Mundini [F. 40a:] Hic labor expirat nec fructus amice libelli [Emo[r]itur lector commoditate breui | Occultos mo[r]bos. mo[r]bo[r]um deniqz curas | Perdocet: atqz basym p[r]estat in arte. Vale. |

[40] ff 4°. [S. I. et a., Lipsiae, Martin Landsberg, prior to 1478.]

[Hain no. 11633.]

17. [Regimen sanitatis Salernitanum]. [F. 1a tit:] REGIMEN SA= | nitatis cu[m] expositione magistri Arnal= | di de villanoua Cathellano | Nouiter imp[r]essus. | [F. 2a:] Incipit Regime[n] sanitatis salernitanu[m] excelle[n]tissimu[m] pro co[n]serua | tione sanitatis totius humani generis putilissimu[m]: necno[n] a magistro | Arnaldo de Villa noua Cathellano omniu[m] medico uiue[n]tiu[m] ge[m]ma |

utiliter: *** Montispessulani rege[n]tes. Anno. M.cccc. | lxxx.predicto loco actu moram trahentes. | [In fine:] Hoc opus optatur: quod Flos medicine vocatur. |
[82] ff 4°. [S. I. et typ. n.], 1480.
[Hain no. 13750.]

18. [Regimen sanitatis Salernitanum]. [F. 1a tit:] REGIMEN SA= | nitatis cu[m] expositione magistri Arnal= | di de Villa noua Cathellano | [F. 2a:] § Incipit Regime[n] sanitatis Salernitanu[m] excelle[n]tissimu[m] pro co[n]serua | tione sanitatis totius humani generis putilissimu[m]: necno[n] a magistro | Arnaldo de Villa noua Cathellano omniu[m] medicor uiuentiu[m] gem[m]a | utiliter: *** Montispessulani regentes. Anno. M.cccc. | lxxx. p[re]dicto loco actu mora[m] trahentes. | [In fine:] § Impressum Venetijs p Bernardinu[m] Venetu[m] de Vitalibus. |
[82] ff 4°. Venetiis, Bernardinus Venetus de Vitalibus, [1480].
[Hain no. 13754.]

Salernum, School of
See—Regimen sanitatis Salernitanum

Savonarola, Giovanni Michele
See—Savonarola, Michael, Patav. Medic.

19. Savonarola, Michael, Patav. Medic. [Opus Medicinae seu Practica de aegritudinibus de capite usque ad pedes.] [F. 1 desider.] [F. 2a:] § Ad Sigismundum Polcastrum Virum quippe in | geniosissimum operi p[r]atico deditum amicum opti- | mum. | [F. 5a: (sig. b [i])] § Tractatus primus de modo p[ro]cessus artificialis medici | in medendo. In studio ferrariensi sub excellentissimo | duce Bo[r]sio. Clarissimi ac huius tempo[r]is medico[r]um | p[r]incipis domini Ioannis Michaelis sauonarole pa- | tauini p[r]actica de egritudinibus a capite vsqz ad pedes | feliciter incipit. | [F. 265b, col. 2:] nis. p[r]o quo & ceteris deo summo patri silio & spiritui | *** § Venetijs per Andream de Bonetis de | Papia. x. Maij. M.cccclxxxvi. | § Laus Deo. Finis. |
[265] ff F°. Venetiis, Andreas de Bonetis de Pavia, 1486.
[Hain no. 14481.]
Imperfect. ff 1 (sig. a i) missing.

Silvaticus, Mathaeus
See—Sylvaticus, Matthaeus, Medic. Patav.

20. Simon Genuensis. [Synonyma medicinae s. clavis sanationis.] [F. 1 vacat.] [F. 2a:] Incipit clauis sanationis elabo[r]ata p[er] venera- | bilem virum magistru[m] Simonem Ianuensem | *** [F. 99a:] Uenetijs per Guielmum de Tridino ex | Monteferato. Mccccclxxxvi. die. xiii. | Nouemb[r]is. | ***
[99] ff F°. Venetiis, Guillielmus (de Plano) Cereto de Tridino de Monteferrato cognomento anima mia, 1486.
[Hain no. 14749.]

21. Sylvaticus, Matthaeus, Medic. Patav. [Liber pandectarum medicinae.] [F. 1–5, desider.] [F. 6a:] Liber pandectarum medicine omnia | medicine simplicia contine[n]s: quem ex om | nibus antiquo[r]um lib[r]is aggregauit exi | mius artium & medicine docto[r] Mathe | us siluaticus ad serenissimum sicilie rege[m] | Robertum. | [F. 307a: col. 2, I. 54:] [Con]disi quid est lege literam condes. |
[307] ff F°. [Argentorati, R singulare, circa 1470.]
[Hain no. 15192.]
Imperfect. ff 1 to 5 missing.

22. Sylvaticus, Matthaeus, Medic. Patav. [Liber pandectarum medicinae.] [F. ia vacat.] [F. ib:] Matheus mo[r]etus B[r]ixiensis ad reuerendissimu[m] in christo patrez ac dum Dominu Franci- | scum de gonzaga: cardinalem Mantuanum: ac Bononie legatum. | [F. 2a:] Liber pandectaru[m] me | dicine: omnia medicine simplicia co[n]tines: que ex | o[mn]ibus antiquo[rum] lib[r]is aggregauit eximius artiu[m] | & medicine doctor Mattheus siluaticus ad sere- | nissimum Sicilie regem Robertum. | [F. 232b, col. 2:] *** Op[us] pandectaru[m] medicine eme[n]datu[m] *** Uenetijs i[m]pe[n]dio Iohan[n]is Colonie | agrippinesis Ioha[n]nisqz ma[n]then gheretzen socio[rum] | su[m]ma cu[m] dilige[n]tia i[m]p[r]essu[m] feliciter finit a[n]no salutis | ch[r]istiane. M.cccclxxx.sexto idus octob[r]is. | LAUS DEO. | [F. 233a–235a, tab.]
[235] ff F°. Venetiis, Johannes de Colonia et Johannes Manthen de Gherretzem, 1480.
[Hain no. 15198.]

23. Valerius, Maximus. [Factorum ac dictorum memorabilium.] [F. 1a tit:] Valerius Maximus cum commento | Oliuerii Arzignanensis Vicentini. | [F. 1b:] Petrus Brutus Episcopus Cathare[n]sis. Oliuerio suo oratori clarissimo. S. P. D. | [F. 4a, post septem lin. comment.:] Valerii Maximi Factorum ac dictorum memorabi- | lium. Liber ad Tiberium Caesarem. Prologus. | [F. 210a numbered (CCVII):] Explicit opus Valerii Maximi cum co[m]mento Oliuerii Arzignanensis. Impræssum Venetiis. | M.cccc.lxxxxiiii. die. xvi. Iulii. | [F. 210b.] Registrum | ***
[210] ff F°. Venetiis, n. pub., 1494.
[Hain no. 15793.]

INCUNABULA IN THE LIBRARY OF THE SCHOOL OF MEDICINE OF WASHINGTON UNIVERSITY, ST. LOUIS, MO.

Kamintus, Episcopus Arusiensis. [attribution]: Regimen contra pestilentiam sive epidemiam. Quarto.
[Leipzig], Arnold of Cöln. [circa 1493].
Reichling 581.

Regimen sanitatis Salernitanum, cum expositionibus Arnoldi de Villanova. Quarto. Venezia, Bernardinus de Vitalibus. [circa 1500].
Reichling, vi, 136; Copinger 5053; Pellechet 1289.

INCUNABULA IN THE LIBRARY OF THE PENNSYLVANIA HOSPITAL,[*] PHILADELPHIA, PA.

Augustis, Quiricus de. Lumen apothecariorum. (F. la tit.) Lumen Apothecariorũ cũ | certis expositionibus no | uiter impzessum. | (F. 2a c. sign. aij): ¶ Incipit libellus intitulatus lumen apothecarioz | Editus a subtilissimo artiuz 7 medicine doctoze do | mino magistro Quirico de Augustis de terdona. (F. 38a post ep. supra citatam:) ¶ Habes candidissime lectoz opus aurcum: Sum | ma cura 7 diligentia ĩpzessum venetijs per Joanne Gregoriũ de gregorijs fratres Anno salutifere incar | nationis domini. M. cccc. xcv. die xxij. septẽbzis. | Finis. |
Venetiis, Joannes et Gregorius de Gregoriis de Forlivio, 1495.
(Hain no. 2120.)

Avenzohar, Abhumeron. (Theicrisi dahalmodana vahaltadabir c. Colliget Avverrois) (F. la. tit.) ¶ Abhumeron Abynzoar | Coliget auerrois | (F. 42b:) ¶ Hieronymus Surianus physicus domini magistri Jacobi suriani de Arimino | Artium ac medicine doctozis preclarissi (sic) fili(us) Lectozi Salute pluriman dicit. | *** (F. 43a:) ¶ Incipit liber de medici (n) a Auerroys: qui dicitur colliget: |*** (F. 102b:)*** Impressum Uenetijs per magistrum Otinum papinsem | de luna. Anno domini nostri iesu chzisti. Mccccvij, de | cimo kalendas ianuarias.***
103 ff F°. Venetiis, Otinus Papiensis de Luna, 1497.
(Hain no. 2188.)

Glanvil, Bartholomaeus. (De proprietatibus rerum) (F. la:) ¶ Incipiu (n) t tituli | lib (r) o (rum) et capitulo (r) u (m) venerabilis | Bartholomei anglici de (p (r) op (r) i) | etatibus reru(m) ***Imp (r) essus per industrio | sum viru (m) Antoniu (m) koburger inclite Nuren- | berge ciue (m) Anno salutis gratie. M. cccclxxxiij. | iij, kal (enda)s. Iunij.
266 ff F°. Norimbergae, Anthonius Koburger, 1483.
(Hain no. 2505.)

Guy de Chauliac. (Chirurgia cum aliorum tractatibus de eadem materia.) (F. la tit:) Cyrurgia parua Guidonis | Cyrurgia Albucasis cu (m) caute- | rijs (et) alijs instrumentis. | Tractatus de oculis. Iesu hali | Tractatus de oculis. Canamusali | (Ad finem:) ¶ Explicit liber de curis omnium passionum oculo (rum) que (m) fecit (et) composuit Canamusali philosophus De Baldach. | Uenetijs per Bonetum Locatellum p (r) esbyteru (m) Ma(n)dato (et) sumptibus heredu (m) quonda (m) Nobilis viri domini | Octauiani Scoti Modoetie (n)sis. Anno domini M.CCCCC. sexto Kal. Feb(r)uarias. |
68 ff. il. F°. Venetiis, Bonetus Locatellus for Octavianus Scotus, 1500.
(Hain no. 4813.)

Jacobus Forliviensis. (Expositio in aphorismos Hippocratis.) (F. la. c. sign. a 2) Illustris medici Jacobi fo(r)liviensis ĩ affo(r)ismos | ypo. egregia expositio cũ q̃õnibus feliciter incipiunt | (F. 156b: in fine) Jacobi fo(r)liuiensis Artium r medicine pstantissimi r | celebẽrimi docto(r) is Cõmentationes ĩ ypo. affo(r)ismos | Co(r)recte per Egregium Artium medicine docto(r)ez | dominum magistrum Franciscuz de Bobio Feliciter | expliciunt. Imp(r)esse p̃p̃ per p̃stantem uirum r impsso | rie artis exptissimum. M Antonium de carcháo: An | no dñi. 1484. | Laus Deo. |
(156) ff. F°. Papiae, Antonius de Carchano, Mediolanis, 1484.

Manliis de Bosco, Joannes Jacobus. (Luminare maius). (F. la. tit:) Luminare maius. | Cinthius vt totum radijs illuminat o(r)bem. | Illuminat lateb(r)as sic medicina tuas. | (F. lb:) Joannis Jacobi Manlij de Bosco in opus Luminarus maio(r)is ad Bernardinũ | nigrum ciuem Papiensem p(r)ohemium feliciter incipit. | (Epistolam seq. operis divisio.) (F. 2a c. sign. a^2 et $n.^2$) Johãnis iacobi de manlijs de boscho Alexadrini sup | descriptiones antidotarij r p(r)actice diui Johanis mesue | aliorum illustrium medico(r)uz clarissima interp(r)etatio | incipit. dicta Luminare maius. | (F. 77b col. 2) Opus diligenter co(r)rectum r a multis docto(r)ib exa- | minatum Imp(r)essum in inclita ciuitate Uenetiarum | per Bonetuz Locatelluz: mandato r expensis Nobilis | Uiri dñi Octauiani Scoti ciuis Modoetiesis Anno sal| uato(r)is nostri. 1496. die. 28 maij ad laudem omnipoten- | tis dei: r eius intemerate virginis. | Finis. |
(79)ff. F°. Venetiis, Bonetus Locatellus, Presbyter Bergomensis, 1496.
(Hain no. 10712.)

Porcastris, Sigismundus de. Quaestio de restauratione humidi. (F. la c. sign. A:) Clarissimi philosophi ac medici Sigismondi de po(r)- | chastris. q. de Restauratiõe humidi feliciter incipit. | (F. 6a in fine:) Cõpleta ẽ questio de restauratiõe humidi compilata ab ex | cellentissimo magistro Sigismõdo de po(r)castris die. xxv. | mensis ottob(r)is. (sic) Mcccc.lxxxx. Imp(r)- essum venetijs per Peregrinum Bonon. |
(6)ff. F°. Venetiis, Perigrinus de Pasqualibus de Bononia, 1490.

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[*] Compiled by Florence M. Street, Librarian.

[From Fabricius' Opera Chirurgica, Padua, 1666.]

EDITORIAL

EARLY SCIENCE IN OXFORD

We are glad to learn that the study of the early history of science at Oxford University is being actively pushed. It may be recalled that at the meeting of the British Association for the Advancement of Science at Oxford, Sir William Osler arranged a most interesting exhibit of instruments which had been used in early research in various branches of the natural and physical sciences, physics, mathematics, etc., at Oxford. The exhibition excited the greatest interest and stimulated study of the methods used by the founders or early workers in different branches of scientific activity.

A volume has already appeared under the editorship of R. T. Gunther, M.A. covering chemistry, mathematics, physics and surveying, and we understand that another, containing the early history of astronomy at Oxford, is soon to follow.

It is greatly to be hoped that this "Oxford Movement" will be followed by similar action on the part of other old institutions whose historical past deserves more study than has hitherto been given to it. Many of the smaller colleges and universities of Germany, Italy and France have libraries and collections of instruments which would be of inestimable value in the illustration of the historical growth and development, not only of medical, but of all the sciences. Even in our own country it would be well if we could make collections now of early material of this kind before the wear and tear of age has destroyed them or they are completely buried in the dust of the lumber rooms. In Philadelphia laudable efforts in this direction have been made by the American Philosophical Society and the Franklin Institute. In the museums of these Societies are preserved instruments used by early American scientific workers such as Benjamin Franklin, Dr. Priestley, David Rittenhouse, and James Logan. These collections are visited and studied by large numbers of people.

There are many like institutions in the United States where it would now be possible to collect material which otherwise in a few years will be irretrievably lost.

THEOPHRASTUS RENAUDOT, M.D.

Originator of Newspapers

The *British Medical Journal* of October 28, 1922 contains an interesting article under the caption:

HE WHO GUY PATIN SO THOROUGHLY HATED AND TO WHOM HE APPLIED IN SCORN THE EPITHET "GAZETTEER."

The writer points out that although broadsheets had been issued during the latter part of the sixteenth century in Italy, Spain and the Netherlands, nevertheless Renaudot deserves the title, "Founder of Newspapers," if by that we understand a paper published at regular intervals and giving the news of the day. In anticipation of Renaudot's newspaper enterprise there was the *Mercure François*, started in 1605. This had been modelled on the *Mercurius Gallo-Belgicus*, first published in Cologne in 1594; but these were both of the nature of annuals.

The first number of *La Gazette* appeared on May 30, 1631. In planning and conducting it he is said to have been greatly helped by a famous genealogist, Père Hozier, whose occupation led to his having a very large number of correspondents in France and other countries. Richelieu communicated official documents, and it is even asserted that Louis XIII was an occasional contributor. Two numbers were published weekly, the one entitled *La Gazette*, the other *Nouvelles Ordinaires*. In addition, supplements were issued from time to time containing individual narratives and official documents. At the end of the year the various documents were gathered into a volume, and issued with a preface under the general title *Recueil des Gazettes*. A writer in the *Literary Supplement* last year stated that Renaudot had three correspondents in England: one in London, another at Chester for Ireland, and a third at Berwick for Scotland. They wrote weekly letters, and special attention was given to British affairs both in the *Gazette* and the annual *Recueil*. Advertisements were not inserted in the *Gazette*, but were printed in a separate sheet, *Feuilles du Bureau d'Adresse;* this no doubt meant a considerable economy in printer's charges.

In spite of all the other irons he had in the fire, Renaudot continued to practice medicine himself, and imported doctors from the University of Montpellier and other provincial universities to assist him and to help in the distribution of certain secret remedies, apparently all of them containing antimony. He established a free clinic for the poor, and announced that the King had given him a site on which he proposed to erect a building for this purpose. According to law only graduates of the University of Paris could practice in that city. In 1566 the prescription of antimony as a drug had been condemned by the highest legal authority in Paris, the Parlement, and the majority of physicians in Paris, led by Guy Patin, still strongly objected to its use. Eventually the Faculty raised an action against Renaudot on various grounds. It has generally been assumed that the opposition of the Faculty to Renaudot and his associates was due to pure prejudice, but it must be admitted that the Faculty had good grounds to object to some of Renaudot's proceedings, and in particular to his combination of medicine and pawnbroking; even as a pawnbroker his hands were not clean. The court by which the case was first heard decided against Renaudot and his provincial friends on December 9, 1643, and forbade them to practice or to hold meetings. Renaudot appealed to the higher court, the Parlement, which not only rejected his appeal (March 1, 1644) but suppressed his pawnshop, on the ground that it was injurious to the public interest, and directed all the objects pledged, to be returned to the owners'. He was allowed to continue his registry office and *Gazette*. In spite of the judgment against him Renaudot continued to practice and to sell his remedies, and lived long enough to see the condemnation of the use of antimony withdrawn. Towards the end of his life he was made historiographer to the King and died at the Louvre in 1653. Through his various enterprises Renaudot must have made a good deal of money, but seems to have kept little of it. Guy Patin alleged that he died in poverty, while others assert that he left a modest fortune.—From *Nova et Vetera*.

MEDICAL MEN IN OTHER FIELDS OF ENDEAVOR

Dr. W. Moore Thompson has presented an interesting resumé* of the notable work of different medical men outside of their profession. Many of those whom he discusses studied medicine but never followed this profession seriously. Perhaps the most famous of these were Goethe, Ibsen and Schiller, who served as an army medical officer at one time.

Of the physicians who practiced their profession and also achieved literary fame,

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* *Illinois M. J.*, July, Aug., Oct., 1923.

Dr. Thompson mentions especially Sir Richard Blackmore, Arthur Johnston, whose Latin poetry was greatly esteemed; Mark Akenside, John Phillips, and George Crabbe. These are familiar instances to most of us, as are Rabelais, Smollett, and Goldsmith. Dr. Thompson refers also to Sir Thomas Browne, Dr. John Brown, Oliver Wendell Holmes, S. Weir Mitchell and Conan Doyle. There are others, however, whose literary fame has completely overshadowed their medical activities. The famous "Delta" of *Blackwood's Magazine* was Dr. David Macbeth Moir, who was a medical practitioner in Edinburgh throughout his life; Thomas Gordon Hake, Drummond of Canada, Edward W. Watson of Philadelphia, James B. Naylor of Columbus, Ohio, and Charles Alexander Eastman of Boston. The present poet laureate of England, Robert Seymour Bridges, practiced medicine successfully for twenty-five years; Eugène Sue, the author of "The Wandering Jew," was a surgeon in the French navy; Charles Lever practiced medicine for several years in Brussels and Samuel Warren, author of "Ten Thousand a Year" and "Passages from the Diary of a Late Physician," practiced medicine while he followed several other careers. J. G. Holland was a practicing physician before he became the founder and first editor of *Scribner's*, later, *The Century Magazine.*

In addition to his resumé of physicians who have been prominent in the literary world, Dr. Thompson considers some of those who have achieved fame as explorers: Charcot, Elisha Kent Kane and Hayes.

In political life many physicians have been prominent. Jameson, whose famous raid led to such changes in the political status of South Africa, was a physician: Clemenceau; Sun Yat Sen, the president of South China; Sir Charles Tupper, who was premier of Canada; and Leonard Wood, who is now in charge of the affairs of the United States in the Philippines, all studied or practiced medicine before they became politicians.

MASSAGE IN ANTIQUITY

C. J. S. Thompson, M.B.E., the curator of the Wellcome Historical Medical Museum, has written a most interesting description of the methods of massage employed by the Greeks and Romans.

The article appeared originally in the *Journal of the Chartered Society of Massage and Medical Gymnastics*, and is accompanied by some most interesting illustrations taken from antique sculpture.

In ancient Greece the treatment of the body by massage was generally practised after the use of the bath or the gymnasium, and was carried out by four classes of practitioners who were called the *unctores*, the *alipili*, the *aliptes* and the *tractatores*.

The *unctores*, who were slaves, were employed in attending to the different wants of the bathers. They also supplied frictions in the baths, as well as massage and unguents. According to some historians, these slaves were a kind of social parasite who were delighted to turn their hand to anything and were only too pleased to render their services in return for a good meal.

The *alipili* were men of the same class, whose duty it was, if required, to scrape the hair from different parts of the body, and particularly from under the arm-pits.

The actual masseurs were called *tractatores* and were trained operators. It was their duty to rub and manipulate the body and limbs with their hands, so as to render the joints more supple and to increase the circulation. They made no use of oil or unguents but worked with their hands dry. They do not appear to have practised at the baths or palestrae to any great extent; they were called in, however, during the course of feasts, and there are representations of them administering frictions and applying their perfumed unguents to those taking part.

Women, then as now, were adepts at this form of treatment, on account of their light touch and supple fingers, and they were known as *tractatrices*.

The class known as *aliptes* had, in the performance of their duties, not only to be proficient at massage, but also well versed in the application of unguents and oils. They were skilled operators, and it was part of their duty to direct their patients to breathe in such a manner while they were anointing them, that it should help the absorption of the fats into the skin. They no doubt obtained from experience a practical knowledge of the anatomy of the body, and were able to advise those who underwent their treatment as to the best methods to employ in order to preserve or increase their strength.

The chief instrument used by the *aliptes* was a strigil, a bronze sickle-shaped instrument with a concave blade and handle. This was used to scrape the oil and perspiration from the limbs after athletic exercise and before the body was massaged or rubbed with ointments.

One of the pictures accompanying Mr. Thompson's article illustrates the strigil and its use. Thompson surmises that well-to-do persons probably kept their own strigils at the baths just as a man keeps his own razor at the barber shop. Some of the strigils in the Wellcome Historical Medical Museum have finely ornamented handles and some are stamped with the names of the owners.

GREEK MEDICAL ETIQUETTE

Mr. W. H. S. Jones has written a most interesting article* on the subject of the ethical practices of the ancient Greeks.

There is no evidence that the Asclepiadae exercised any control over medical practice nor is there any reason to believe that violation of the Hippocratic Oath was followed by deterring penalties.

So far as I know, the only sources for Greek etiquette, with the exception of a few scattered allusions, are four small tracts in the Hippocratic collection, Oath, Decorum, Law, and Precepts. Considerable controversy has raged over the date of the first of these, but opinion is tending towards an Alexandrine or even later date for at least a great part of it. The other three have been strangely neglected, but I cannot imagine a competent scholar assigning to any of them a date earlier than the third century B.C. It seems, therefore, that for two centuries, from 500 to 300 B.C., during which period there flourished all that was best in ancient Greece, nothing was written, or at least nothing has come down to us, bearing on the question of medical etiquette.

The lack of references to etiquette in the earlier treatises of the Hippocratic collection and the insistence upon it in the later may be connected with the decline in the dignity of the profession. As the status of medicine fell, less desirable characters became doctors and those who cared for "the art," as it was always called, became desirous of raising the moral tone and set down rules in writing. It is interesting to note that Precepts, the great repository of etiquette, is certainly very late and was probably written by a Roman. Now at Rome medicine was a far less dignified profession than it was in Greece, practitioners in the ordinary sense being rare; medical treatment was usually the task of slaves. It is at least a strange coincidence that Dr. Singer, who has made a special study of the Oath, thinks that it, too, was compiled in its final state at Rome.

The rest of the article is devoted to a careful consideration of the general ideas of duty or ethics which seem to have prevailed in the Greek medical profession.

**Proc. Roy. Soc. Med.*, Lond., Section of the history of medicine.

CORRESPONDENCE

To the Editor:

Everyone has heard of *Odium Medicum*, the jealousy and enmity toward each other of medical practitioners, second only to the *Odium Theologicum*, if even to that. But here we have a Renaissance physician's tribute to a deceased colleague.

The well-known doctor who would take anything from his confrere but his medicine, was outdone by Sir Samuel Garth who retaliated on his competitor, Sir Richard Blackmore, whom by the way, he dubbed "the merry poetaster of Saddlers' Hall in Cheapside":

Girolamo Fracastoro
(1484–1553)

Unwieldy pedant let thy awkward muse
With censures praise, with flatteries abuse;

. . . .

Thy feeble satires ne'er can do him wrong,
Thy poems and thy patients live not long.

Much more pleasant is it to recall words and acts of friendship by medical men toward each other.

Dr. Richard Mead, a convinced Whig, when called to attend Walpole, refused to prescribe for him until he should release Dr. John Freind from the Tower into which he had got himself because of his violent Toryism when taking part in Atterbury's mad scheme for reinstating the Stuarts. Mead and Freind had nothing in common but their scholarship and their profession; they differed in politics, in theory of medicine and its practice as well as in nearly everything else.

One very beautiful instance of appreciation by one doctor of another comes to us from the Italy of the Renaissance.

In Verona, early in the sixteenth century, lived two very celebrated physicians, between whom there was the greatest rivalry. Both were able, zealous and learned. One, Girolamo Fracastoro, was of the first rank, not only in medicine, but also in mathematics, astronomy and philosophy, while no less competent an authority than Julius Caesar Scaliger pronounced him second to Vergil alone in Latin verse. The other, Joannes Baptista Montanus, was of high rank in medicine, but though learned he had not the facility of Fracastoro in verse. He made up for this deficiency by the intensity of his hostility to his colleague.

On the death of Montanus (1540), all enmity was forgotten; and Fracastoro wrote the following elegiacs in memory of his former adversary:

IN MORTEM IOANNIS BAPTISTA MONTANI,
MEDICI VERONENSIS

Dum medica, Montane, doces ope vincere fata
  Et Lachesi inuita, viuere posse diu,
Lethaeo indignans pressit te Parca sopore
  Et secuit vitæ grandia fila tuæ.
Sic, animas et tu Aesclepides subtrahis orco
  Te quoque sæuorum perdidit ira Deûm.

ON THE DEATH OF JOANNES BAPTISTA MONTANUS,
PHYSICIAN OF VERONA.

While, O Montanus, thou art teaching by the help of medicine to conquer the Fates, and against the will of Lachesis to be able to live long, indignant Fate has pressed thee down with the sleep of Lethe and cut the great cords of thy life. Thou, too, a son of Aesculapius drawest souls from death, and thee, too, the wrath of the vengeful gods hath destroyed.

Is it possible that Milton, who read everything, had these lines in mind when he made Lachesis "with her abhorred shears," "slit the newspun life"?

In any case the comparison of the physician to the great founder of his art, both in his skill and in his fate, is as beautiful as it is creditable to the charity of the author. It will be remembered that in the old myth, Aesculapius was slain by the angry gods for preserving so many souls from Hades, but he was taken to Heaven by Jove. Fracastoro, no doubt, suggests the same fate for the son as for the great father.

The members of the third of the learned professions, the Gentlemen of the Long Robe, have not generally carried professional controversy into private life. As a rule, they "strive mightily, but eat and drink as friends." There is no such thing as *Odium Forense*—or is there?

William Renwick Riddell.
Toronto, Can.

To the Editor:

In the year 1285 Edward I commissioned Solomon of Rochester, John of Boyland and Robert Fulton justices to hold court at Oxford. The records of their proceedings are comprised in six rolls, for the most part duplicates, now preserved in the Public Record Office, London. From these records it appears that the judges not only disposed of current cases but also made a searching investigation into privileges claimed and exercised and into all unpunished crimes of which they could learn. No time limit seems to have been recognized. Few of the cases are dated, but one was twenty-five years old and in many the numerous deaths among principals and witnesses indicate the lapse of considerable time. The following curious entry, which affords an illustration of the risks attending the practice of surgery in the England of the thirteenth century is of this type. This case is recorded in Assize Roll 708, membrane 29v, and also in 710, 36v. The text of 708 is the more correct, but I have made a few emendations with the aid of 710.

Johannes de la Ryvere de Esthanney de Comitatu Berkeria habuit quamdam apostemam super humerum suum dextrum. Venit ad domum Stephani iuxta fossatum in la more cuiusdam medici et locutus fuit cum eodem ad sanandum eum. Et idem Stephanus scidit predictam apostemam eiusdem Johannis, de cuius abscissione et sanguinis effusione predictus Johannes quarto die post inde obiit. Et predictus Stephanus pre timore subtraxit se per magnum tempus et postea rediit domi et ibi obiit. Set quia subtraxit se catalla eius confiscantur pro fuga. Catalla eius vij li. viij d. unde vicecomes respondeat. Postea testatum est quod predictus Stephanus obiit et de fuga sua convinci non potest, per quod catalla sua dimittere possit. Ideo nichil de catallis predictis.

(John-of-the-River, of East Hanney in County Berks, had a certain abscess on his right shoulder. He came to the house of Stephen-by-the-dike (or ditch)-in-the-moor, a physician, and talked with him with reference to curing him. And the same Stephen cut the aforesaid abscess of the same John, of cutting which off and the effusion of blood, the aforesaid John on the fourth day thereafter died. And the aforesaid Stephen because of fear withdrew himself for a long time and afterwards he returned home and there died. But because he withdrew himself, let his chattels be confiscated by reason of his flight. His chattels amount to seven pounds eight pence, for which let the Sheriff answer. Afterwards it was testified that the aforesaid Stephen is dead and cannot be convicted of his flight, because of which he (the Sheriff) may release his chattels. Therefore no thing is to be had of the aforesaid chattels.)

W. Romaine Newbold.
Philadelphia.

BOOK REVIEWS

Montaigne and Medicine: Being the Essayist's Comments on contemporary Physic and Physicians; his thoughts of many material Matters relating to Life and Death; an Account of his bodily Ailments and Peculiarities and of his Travels in Search of Health. By James Spottiswoode Taylor. Paul B. Hoeber, New York, 1922.

Montaigne has always been a favorite author of physicians. Why? The following quotations, one from Buckle and one from Carlyle, reveal in part the reason: "Under the guise of a mere man of the world expressing natural thoughts in a common language, Montaigne concealed a spirit of lofty and audacious inquiry." "Montaigne's religion at best is an anxious wish, like that of Rabelais, a great perhaps."

True physicians, those born with an urge to learn the how of nature and yearning to try to solve the insoluble why (and such men only are true physicians) find in Montaigne the spirit of the seeker after a true philosophy. The mere medical tradesmen, who may, be it admitted, be very clever and very successful but who got into medicine because of mere chance or opportunity to earn a livelihood, see nothing in him. It matters not [illegible]ll that his science is antique and many of his opinions erroneous: he has the spirit of the real philosopher, and hence the medical thinkers of today, of which notwithstanding our materialism and the poorness of our educational system there are many, find in him a kindred spirit.

Dr. Taylor has done a well worthwhile work in bringing together Montaigne's thoughts on physic and physicians, life and death, and his own account of his ailments and peculiarities, his physical life, and his travels in search of health. Physic as interpreted by Taylor means much more than material medicines: it includes, and very properly, education, and the reviewer advises modern pedagogues, especially those who think they have discovered some new thing, to read Montaigne's account of his own upbringing and his views on the teaching of children. Montaigne with good reason professed a horror of doctors, for he suffered much from illness but, as Taylor says, he believed in medicine and was friendly to the healing art. Terrible as his picture of the state of medicine in his day may be, it is a true delineation.

Montaigne was wise and witty with the wisdom and wit that appeals to thinking men of all times and places, and hence he continues to be interesting in this age, unlike his own in almost every way, save that human nature remains the same as always. Hence this little book should not only be read but studied, meditated over, and owned by all medical men. Anyone who reads it several times will wish to read all Montaigne's essays and will hasten to the nearest bookseller to buy them.

C. W. Burr, m.d.

Theophrast von Hohenheim gen. Paracelsus Sämtliche Werke. Die medizinischen, naturwissenschaftlichen und naturphilosophischen Schriften. Herausgegeben von Karl Sudhoff und Wilhelm Matthiesen, München, 1922.

None but the indefatigable Sudhoff could have undertaken a monumental task like that of the publication, with abundant commentaries, of the writings of Paracelsus. The present volume, although the first to be issued, is in reality the sixth in the contemplated series of ten or more, and deals with wounds, fractures and other surgical conditions. In a large measure the writings are polemical, imbued with the coarse gibes characteristic of the controversies, of the age and perhaps still more characteristic of the man Paracelsus himself. There is, however, much commonsense as the following observations regarding the healing of wounds witness: "In wounds nature is the real physician. All that is necessary is to prevent infection in wound diseases. The humors and complexions diet and weather, and the stars have no influence. Only the proper treatment, that which lets nature act in peace, determines the result."

It seems Paracelsus always carried a chip on his shoulder and not being a respecter of persons, dared high and low to knock it off. He had "hundreds" of disciples, of whom only two from Pannonia, three from Poland, two from Saxony, one each from Slavonia, Bohemia and the Netherlands, and none from Swabia, turned out well.

The editor preserves, unfortunately we think, the original German text, which is difficult to read and to understand. It is true that rendered into modern German, the work would lose some of its raciness of style, but it would certainly gain in clarity and the pleasure in reading it would be greatly enhanced.

Professor Sudhoff laments the evil times that have fallen on Germany in the last three years, so detrimental to scientific work and to the German printing trade, and hopes that the coming years may be more favorable. All those who love the history and the science of medicine will join him in that wish.

David Riesman, m.d.

Klassiker der Medizin: Louis Pasteur Die Hühnercholera, ihr Erreger, ihr Schutzimpfstoff (1880), By Karl Sudhoff, Translated by Georg Sticker. Johann Ambrosius Barth, Leipz., 1923.

This volume of Professor Sudhoff's "Klassiker der Medizin" is a little book of seventy-five pages of which the translator's introduction takes up thirty-five. However, one can readily forgive this liberal exercise of the editorial prerogative, for Sticker has compressed into his pages an unusually clear and full account of Pasteur's life and work. He shows succinctly how Pasteur's discoveries and those of Koch have revolutionized our conceptions of disease. What a change from that day in 1857 when Pidoux could cry out with vehemence in meeting: "La maladie est en nous, de nous, par nous; idée de spécificité, pensée funeste!" a conception of disease greatly strengthened, but only apparently, by Virchow's "Cellular Pathology" published in the following year.

The essays of Pasteur translated in this volume are four in number and deal with the nature of chicken cholera and its prevention by vaccination. With prophetic vision Pasteur expresses the hope that it may some day be possible to discover the germ of every infectious disease, and that this may lead to the discovery of methods of protecting man and domestic animals against these diseases by proper vaccines.

It is interesting to read of the abuse heaped upon Pasteur by certain members of the Academy of Medicine, who considered him a presumptuous ignoramus for meddling in medical matters without having been trained in medicine. It was particularly Jules Guèrin and Blot who ridiculed his "pretensions." The former said:

> How could he (Pasteur) prove that these infinitesimal organisms are the real cause of chicken cholera? Could they not be with much more probability the results of the disease? We have been told that chickens inoculated with cultures died of the cholera, but our distinguished and learned colleague has forgotten to prove this.

The world little remembers Guèrin and Blot and the other opponents and detractors of Pasteur, but recognizes more and more the great imperishable debt it owes to the tanner's son.

David Riesman, m.d.

No. 2
1924
JUNE

ANNALS OF MEDICAL HISTORY

FRANCIS R. PACKARD M.D. EDITOR [PHILADELPHIA]
PUBLISHED QUARTERLY BY PAUL B. HOEBER INC
67-69 EAST FIFTY NINTH STREET NEW YORK CITY

Entered as second class matter June 2, 1917, at the post office at New York, N. Y., under the Act of March 3, 1879.
Yearly Subscription [illegible]. Single numbers [illegible]

ANNALS OF MEDICAL HISTO

Editor: FRANCIS R. PACKARD, M.D., Philadelphia

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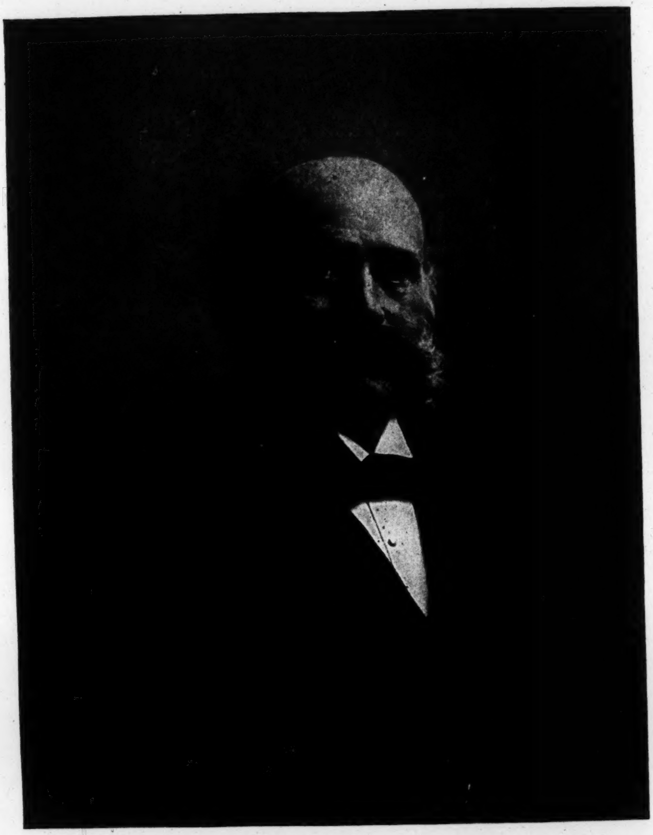
Frontispiece
Annals of Medical History
Summer, 1924



Carl Weigert

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